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BIRMINGHAM MEDICAL REVIEW.

JULY, 1898.

ORIGINAL COMMUNICATIONS.

INGLEBY LECTURES FOR 1898.

EXTRA-UTERINE PREGNANCY.

BY JOHN W TAYLOR, F R.C.S. ENG.

LECTURE I.

(Continued from page 345, Vol. xliii.)

THE TUBAL MOLE.

In a large number of cases pregnancy within the Fallopian tube results in the formation of a tubal mole at a very early stage of gestation. Hæmorrhage occurs (as Mr. Bland Sutton has explained) into the "sub-chorionic chamber" from the circulation of the embryo. In other words blood is poured out into the space between the amnion and chorion, the embryo is injured or destroyed, and a mole of pregnancy results in the same way as it does when a similar accident occurs within the uterus. In a very few cases (one is reported by Mr. Sutton) the mole is extruded from the Fallopian tube into the abdominal cavity, forming a true "Tubal abortion." In by far the greater number of cases, however, the "mole" remains strongly attached at one part to the inner surface of the tube. This point of attachment marks the site of what would afterwards have been the placenta if the pregnancy had continued to develop, and some of the specimens of tubal mole afford good opportunities for examination into its usual extent and consistency. The union of tube and ovum is remarkably firm in this situation, but the extent of the union is limited. The mole clings to the tube like a pedunculated polypus, all the circumference of the ovum except at the point of attachment being absolutely free. Until the placental site is differentiated from the rest of the chorion, and attachment is made, the fructified ovum is probably freely movable: as soon as the attachment is formed it steadily increases in strength, and if the pregnancy goes on it is very probable that *no subsequent change will altogether separate the relations of ovum and tube.* This is not only of importance in the later stages of extra-uterine gestation, as we shall see hereafter, but even at this stage the attachment of the mole is a source of serious trouble. For although the pregnancy becomes abortive it does not then become innocuous or quiescent On the contrary the blighted ovum remains hanging from the minor surface of the tube. It is a source of continuous irritation and hyperæmia in the maternal tissues to which it clings, and is the cause of repeated and dangerous bleedings from the Fallopian tube into the abdominal cavity.

It is true that an attempt is made towards closure of the abdominal ostium of the tube. In acute gonorrhœal salpingitis, as is well known, this closure is usually complete, but in the sub-inflammatory processes occasioned by tubal mole the salpingitis is much less marked and the closure is incomplete. The tube becomes thickened and more vascular, and at the fimbriated end the ring where peritoneum ceases and mucous membrane begins is subject to a slow contraction that tends to partially confine the blood that is effused within the lumen of the tube. The consequent enlargement and dilatation of the tube on the uterine side of this ring of contraction withdraws some of the fimbriæ back within the tube, but the process rarely proceeds further than this in tubal mole. The abdominal ostium still remains patent, though contracted, and is still marked by a small rosette of fimbriæ on its abdominal aspect.

The external or peritoneal aspect of the tube is marked by a globular swelling corresponding to the situation of the "mole." This, in the removed specimen, is very characteristic. Apart

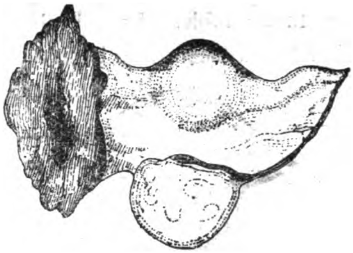

Fig. 7.

To show the "globular swelling corresponding to the situation of the mole." In this specimen—contrary to the usual rule—the fimbriated end of the tube has been widely opened out by the hæmorrhage.

from this, the changes which occur in the tube—in size, shape, position, and mobility—are very much the same as in other cases of tubal enlargement. As a rule, and especially when the pregnancy is situated near the fimbriated end, the enlarged and heavier portion of the tube containing the mole falls directly behind the uterus, rotating somewhat as it does so, and therefore dragging over it and its corresponding ovary the free portion of the broad ligament to which it is attached (meso-salpinx). This takes place very early in the course of the complaint before any bleeding occurs or inflammatory adhesions form. Almost immediately afterwards, however, as we have already seen, bleeding begins both into the tube and from the abdominal ostium, inflammation follows, and the tube becomes increasingly distended and adherent. The tumour which was originally small, strictly posterior in position, moderately mobile and well-defined, slowly extends to one side or the other, and instead of the small well-defined tumour limited to the site of pregnancy we have a complex mass consisting of tube, ovary, broad ligament and blood clot, which tends to fill one side of the pelvis and finally displaces the uterus to the opposite side, pushing the opposite tube and ovary close up against the pelvic wall. The uterus itself is enlarged; a decidua is formed within it, and its consequent increase in bulk tends to accentuate the displacement. An attempt is made in the following sequence of illustrations to roughly depict the changes liable to occur in the tumour occasioned by a tubal mole. In all the uterus and its appendages are sketched as seen from behind.

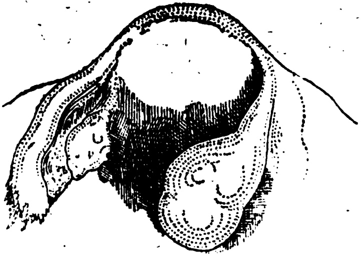

Fig. 8.

In the first we see the little tumour of the tubal pregnancy before any hæmorrhage has taken place. It is movable, hanging freely in the tube and tends to fall or settle (by its own weight) directly behind the uterus. At this stage it either has no effect at all on the position of the uterus, or tends to drag it backwards and also to displace it slightly toward the same side. In some cases the backward displacement of the uterus is very marked, amounting to decided retroflexion. In others (as in the fig.) the retroflexion of the uterus is less marked. It is quite exceptional, however, for the uterus to be anteflexed as it is so often in the early stage of normal pregnancy. The tumour of the pregnancy takes the most dependent position, and the fimbriated end of the tube is tilted up toward the ovary anterior to this and therefore out of sight.

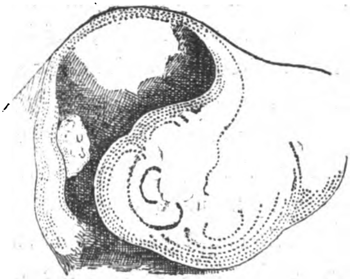

Fig. 9.

In the next figure we see the tube generally distended with blood. The space beneath the meso-salpinx is also filled with blood-clot, and blood is escaping into the pouch of Douglas.

The complex tumour formed by the pregnancy—consisting now of the mole of pregnancy, distended tube, adherent ovary, and hæmatocele covered more or less by the meso-salpinx—has become fixed by adhesions—it is extending outwards and upwards. It is beginning to fill the right side of the pelvis, and as it does so it pushes the uterus and opposite appendages decidedly to the left.

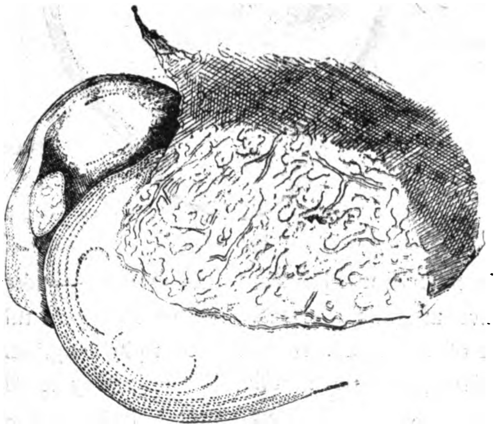

Fig. 10.

In the next illustration, which has been less easy to draw and therefore may be less easy to understand, we see that the uterus has been pushed quite over to the left by the growing mass, so that it must now lie close against the pelvic wall and rectum. Considerable hæmorrhage has taken place beyond and above the limits of the tube, and the tumour formed by this has been roofed in by adhering omentum. The tumour almost fills the pelvis and is extending up into the abdomen above Poupart's ligament. If it continues to grow the uterus will be almost buried beneath it.

This tumour (of pregnancy and blood-clot) is usually on the same side of the body as the tube containing the pregnancy. But it is not always so. I have known one case (No. 22) in which, although the general configuration of the tumour was very much as I have been describing, the bulk of the tumour was on the opposite side of the body to that of the tube containing the pregnancy.

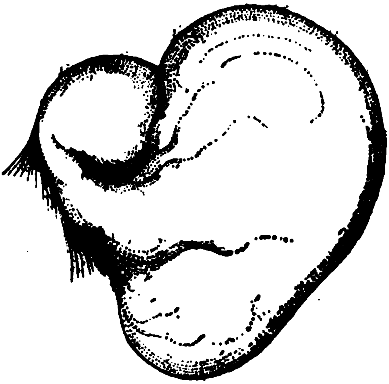

Fig. 11.

In this illustration—the last of the sequence—taken from the case I have mentioned, we see the left Fallopian tube crossing the back of the uterus from left to right, lengthened by the growth of the pregnancy and finally terminating in a large right-sided hæmatocele which occupies the right iliac fossa as well as the pouch of Douglas. In other words we have a left tubal pregnancy causing a right iliac hæmatocele. The uterus in this case suffers rather less lateral displacement than in the previous case, but it is strongly displaced forwards, being pressed against the pubes by the tumour behind it. Sometimes, again, the tumour is originally lateral in position and remains so throughout, the pouch of Douglas being comparatively empty. The tumour is then closely applied to the upper part of the body of the uterus, moves with it, and may easily be taken for some enlargement of the fundus itself.

Intra-peritoneal Hæmatocele, which has been already incidentally referred to and partially described, is a pathological product concerning which much has been learnt during recent years. In women it is almost always caused by tubal pregnancy, sometimes by rupture of the tube and sometimes by bleeding from the fimbriated end of the tube without rupture. The latter is the more common cause of intra-peritoneal hæmatocele, and this bleeding from the unruptured tube is usually set up by the presence of a hæmorrhagic mole within it.

Cases of tubal mole with intra-peritoneal bleeding from the open abdominal ostium probably out-number the cases of tubal pregnancy with rupture of the tube; the hæmorrhage, though almost continuous, or frequently repeated, is moderate in amount, and a well-defined hæmatocele is the invariable sequel. On the other hand, cases of ruptured tubal pregnancy only sometimes give rise to a definite hæmatocele. In fully half the number of cases the resulting hæmorrhage is "diffuse," no time or opportunity is afforded for the formation of a definite blood-tumour, but the hæmorrhage continues until stopped by operation or death. In the remaining cases, where a hæmatocele follows, the latter is often very unstable, subject to sudden and violent alterations from fresh bleeding, so that the tumours may be said to occupy a position midway between intra-peritoneal hæmatocele and diffuse hæmorrhage.

Occasional exceptions to the rule thus formulated are known. For instance, I have met with a case of tubal mole (Case 14) in which the hæmorrhage from the unruptured tube, although it resulted in an intra-peritoneal hæmatocele, was, after recurrence and rupture of the hæmatocele, fully as copious and dangerous as that which I have usually found after later rupture of the tube. And again, I have known at least one case of rupture of the tube (Case 36) resulting in a definite and localised hæmatocele in which the bleeding was very moderate and the tumour resulting from it quite small in size. These exceptional cases, however, do not interfere with the general truth of the statement that rupture of the tube is specially liable to be followed by diffuse bleeding, while hæmorrhage from an unruptured tube containing a mole of pregnancy is essentially the most common cause of intra-peritoneal hæmatocele.

My own statistics on this point are as follows:—Out of 21 cases of intra-peritoneal hæmatocele due to tubal pregnancy (in which the condition of the tube was carefully noted) I find that 14 were due to hæmorrhage from the unruptured tube, while 7 were associated with rupture of the tube.

Dr. Cullingworth's figures are still more striking. He states :—"Of 25 cases of pelvic hæmatocele in which an opportunity occurred of verifying by actual inspection the source of the bleeding 23 were instances of hæmorrhage from the open abdominal ostium of a pregnant Fallopian tube, and only one was due to rupture."

The formation of the hæmatocele is a process full of interest. Much of this has been already described when treating of the tumour formed by the tubal mole. But when the bleeding has reached beyond the limits of the tube and ovary and uterus—when it invades the abdomen from the pelvis (as in the case figured on page 5), how is it limited and what is the process by which a more or less amorphous mass of blood-clot becomes welded or shaped into a definite tumour? It must be remembered that the living abdomen is always full. Consequently when any blood is effused into the pelvis it is in contact with the pelvic viscera, at first with the tube, the ovary, the turned-in fold of the broad ligament, and the back of the uterus. Later on, omentum and intestine come into contact with the growing blood-clot, local peritonitis is set up by hæmorrhage, the pelvic and abdominal viscera become adherent to the surface of the blood-clot, and the latter is bounded everywhere by "peripheral adhesions" to surrounding organs. The intra-peritoneal hæmatocele is temporarily formed. But another process is going on besides this. The outer layer of the blood-clot consolidates into a more or less perfect sac, and in addition to the adhesions, the blood becomes encapsulated by a limiting layer or outer coat derived from its own substance or tissue. Sometimes the hæmorrhage within this capsule ceases altogether—in process of time the adherent viscera become detached and we may find a perfect sac remaining closely fitting round the abdominal mouth of the Fallopian tube, blood being found within it. This, which I have described elsewhere, is known as encapsulated hæmatocele, and examples of this condition are well seen in the specimens removed from cases 7 and 8. In the specimen from No. 7, the sac of the hæmatocele is altogether independent of the ovary and tube, though the mouth of it is closely applied around the fimbriated end of the tube. In the specimen from No. 8, the ovary is incorporated with the wall of the hæmatocele while a mole of pregnancy is visibly distending the unruptured tube. In the figure, the tube has been withdrawn from the inside of the sac in order to show that it is uninjured and intact, but before the separation of the tube from the sac the latter in this case formed a marked tubo-ovarian tumour, which evidently might have given rise to the (unfounded) suspicion of an ovarian pregnancy.

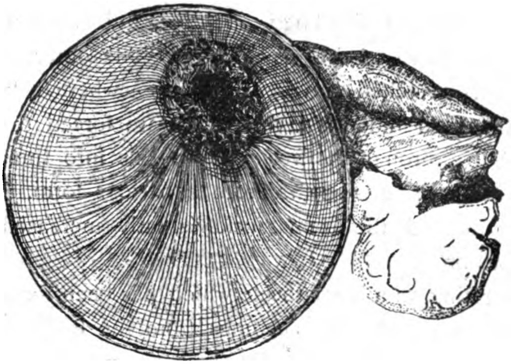

Fig. 12.

Hæmatocele capsule looked at from within—showing fimbriated end of tube in position. The rest of the tube and ovary are seen to be unaltered.

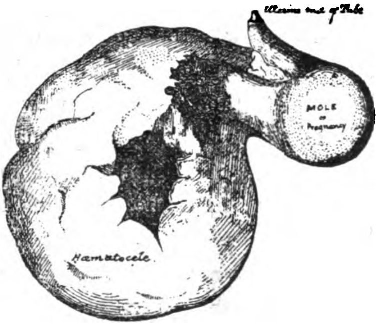

Fig. 13.

But it is only rarely that the hæmorrhage ceases on the immediate formation of the hæmatocele. In nearly all cases of tubal pregnancy with hæmatocele the bleeding is recurrent. The source of the bleeding is the tube, and this is necessarily now in the centre of the hæmatocele. The outer covering of the latter is stretched and distended, somewhere it "gives" to the strain, fresh blood and blood-clot are forced through the rent or bulge through the weakened capsule into the abdomen, fresh local peritonitis occurs, fresh adhesions form, the rent is patched up, and the hæmatocele (greatly increased in size) again goes on.

In operating on a hæmatocele which has been formed in this way by several recurrent bleedings from the fimbriated end of an unruptured tube what sort of specimen do we remove? The recent blood and blood-clot at the site of the last abdominal bleeding—the weakest part of the hæmatocele—are involuntarily broken down by the hand on touching the tumour, this and the central part or contents of the hæmatocele are washed or scooped away, parts of the outer wall are broken off and left adhering to intestine or omentum, and when the Fallopian tube together with the remainder of the sac is ligatured and removed, we find the outer shell of the hæmatocele forming a curious ragged extension of the tube, and if we view the tattered remnants of the capsule from within we may usually observe some fimbriæ of the tube at one point on the inner wall. This marks the aperture of entrance from the tube into the hæmatocele. The following sketches of specimens removed from cases 14, 12 and 9, show this very plainly. In Fig. 14 we see a specimen which looks at first sight like a tubal pregnancy which has ruptured into the broad ligament, so extensive are the remnants of the capsule continuous with the tube. On careful section, however, we see that it is unruptured, that a large mole of pregnancy occupies the middle portion of the tube, that the outer end of the tube has been dilated by hæmorrhage, and that the greater part of the tumour has been formed by the capsule of the hæmatocele, on the inner surface of which the fimbriæ of

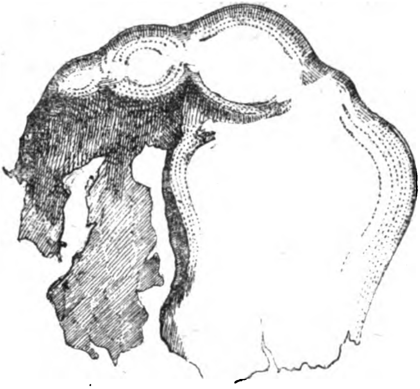

Fig. 14.

the outer end of the tube abruptly terminate. Similarly, in

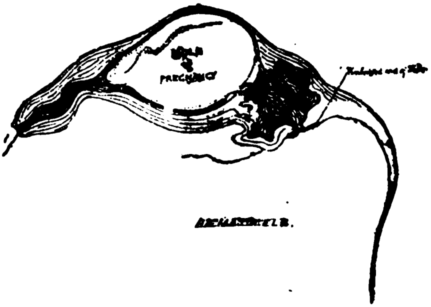

Fig. 15.

Figs 16 and 17, although the remains of the hæmatocele-

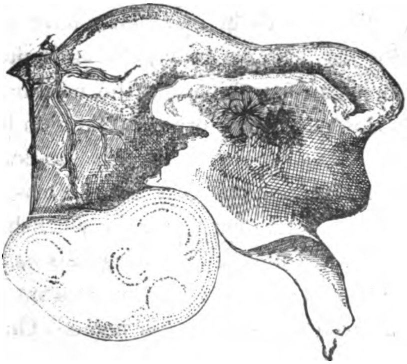

Fig. 16.

capsule are much less extensive, we may recognise in each the unruptured tube (complete from uterine end to fimbriæ) the mole distending one portion of the tube and the rosette of fimbriæ opening on the inner wall of the hæmatocele-capsule.

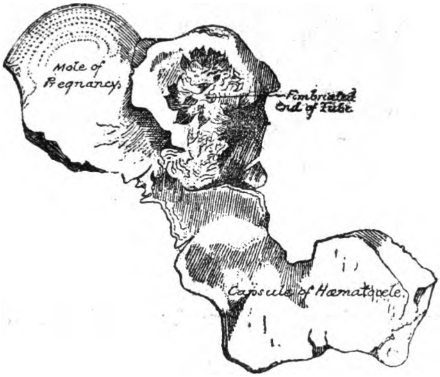

Fig. 17.

The following case, to which the specimen depicted in the last illustration belongs, may be taken as fairly typical of the history associated with such tubal moles and blood-tumours as I have been describing:—

Mrs. E. M., æt. 39, has been married for 17 years. She has five children, the youngest of whom is 11 years of age. Her last normal menstrual period was on June 3rd, 1892. She has had irregular uterine hæmorrhage since July 10. There is no clear history of the passage of any definite membrane, but it is quite possible that shreds of membrane have passed with the discharge. She has been perfectly well until quite recently, and even now complains of nothing but the menstrual irregularity and continued loss. This history was taken on her first visit to the Hospital on August 26th. On examination I found that the uterus was retroflexed, and that a small mass having all the characters of a tubal tumour was to be felt behind and to the right of the retroflexed uterus. The diagnosis was made of early extra-uterine pregnancy, but I had no vacant bed, and the patient was allowed to return to her home. On Sept. 2nd she began to suffer severe abdominal pain, and this date probably marks the beginning of intra-peritoneal hæmorrhage. On Sept. 13th she was admitted into hospital having been confined to her bed for several days with recurrent abdominal pain and sickness. On admission she is seen to be decidedly anæmic, her abdomen is generally distended and very tender, she lies in bed with her legs drawn up, her countenance denotes anxiety and suffering: and on examination, instead of the definite tubal tumour originally felt, the whole of the pouch of Douglas is recognised as filled by a mass the upper limit of which it is impossible to define on account of the abdominal distension and tenderness. To the diagnosis of tubal pregnancy the further diagnosis is added of "intra-peritoneal hæmorrhage." On Sept. 15th I operated, removing the specimen which has already been briefly described. There was some dark fluid blood free in the pelvis, the result of a recent rupture of the hæmatocele. The main tumour filling the pouch of Douglas consisted of this hæmatocele which had formed around the fimbriated end of the right Fallopian tube. Within the tube a mole of pregnancy was found. The patient made a good recovery and was discharged on October 8th.

Sometimes the whole of the pouch of Douglas is occupied by the hæmatocele. When this is the case there is, as a rule, no prominent tumour in the abdomen, but an irregular thickening stretching across the lower part of the belly above the pubes which marks the upper limit of the blood-effusion. The prominence and distension of the hæmatocele caused either directly by the hæmorrhage or secondarily by inflammatory effusion below its upper limit is entirely expended on the pouch of Douglas. This enlarges in every direction and encroaches on the vagina and rectum, until the typical tumour is formed which is characteristic of full distension of the pouch when its upper connection with the general peritoneal cavity is temporarily occluded. Some writers describe this as the common or usual result of intra-peritoneal bleeding. In my own experience it is quite exceptional. Whenever it does occur the difference of tension between the distended pouch of Douglas and the upper abdomen proclaims the fact that the lowest part of the peritoneum is entirely shut off by adhesions from the rest of the cavity, and because of this (as we shall see) the condition can be treated as a purely local affection.

Later rupture of the pregnant tube. This may take place at any time from the first month onward, but is most common from the second to the fourth month. If the pregnancy is situated in the middle or outer portion of the tube and especially if in its growth it opens up to some extent the two layers of the meso-salpinx, the pregnancy may continue to develop for some weeks before rupture or extrusion occurs. When rupture does take place, although the accident may be fatal (and usually is so without operation), the hæmorrhage is probably never so directly and immediately fatal ("fatal without warning") as in the cases of very early rupture when the pregnancy is situated at the uterine end of the tube. It is even possible for hæmorrhage to be altogether absent.

The reason for this variable amount of hæmorrhage is to be mainly sought for in the involvement or escape of the placental attachment. The tube, subject to slowly increasing pressure from within, becomes stretched and thin. As it enlarges and opens up the layers of the meso-salpinx, space is gained in which a pregnancy may develop for some weeks without material difficulty. This space is further protected by the bony pelvis on the side where the pregnancy is situated, and on the opposite side the displaced uterus forms a strong support or boundary. But the time comes, and usually about the third month, when this space is altogether insufficient for the growing tumour. Then either the peritoneum must be still further displaced and the pregnancy must burrow downwards into the cellular tissue beneath it (this belongs to tubo-ligamentary pregnancy and will be considered later), or the covering of the pregnancy gets thinner and thinner and the pregnancy moves upwards until in some places there is probably nothing but the one layer of peritoneum between it and the abdominal cavity. Then with further growth not only is rupture inevitable, but some extrusion of the pregnancy into the abdomen—either partial or complete—is a necessary consequence also. For the present this alone will engage our attention. If the placenta be exposed, separated or torn, the bleeding will be severe—if, on the contrary, the placenta is not involved by the rupture any hæmorrhage will come from the separated tube alone, and this may be moderate, infinitesimal or wanting. Even if placental, the bleeding is only rarely directly and immediately fatal. "As the blood pressure falls the hæmorrhage ceases—at all events for a time—and a more or less well-marked attack of local peritonitis immediately follows. This peritonitis is neither so violent and dangerous nor so protective (by the formation of firm adhesions) as is the peritonitis set up by suppurative inflammation, but it is sufficient to form a kind of roof or cap of adhering omentum and intestine which covers and confines the hæmorrhage and blood-clot. In this way a distinct but unstable intra-peritoneal hæmatocele is formed. I call it unstable because it is always subject to change. Fresh hæmorrhages occur, sooner or later, owing to the increasing detachment and protrusion of the placenta which so frequently follows the rupture, or the pregnancy may continue to grow. In either case the hæmatocele increases in size, its upper limit becomes convex and tense from the augmented contents, and every few days or every day some fresh strain is placed on the boundary of the hæmatocele. This, which is never marked by any solidity or strength, finally gives way, and a fresh invasion of the general peritoneal cavity takes place. Under these circumstances diffuse hæmorrhage into the peritoneum may occur and be as marked as in the cases of acute bleeding from early rupture, but is more frequently followed by another arrest and further repair. Whether this happens or not, however, it is not now so much the rupture of the tube which is the seat of danger as the separation of the placenta and the rupture of the hæmatocele."

From this description which (in the main) I quote from an article on Intra-peritoneal Hæmatocele written in 1895, it will be evident that the hæmatocele caused by later rupture of the tube, when fully formed, is essentially similar—save in extent and severity—to that I have already described as occasioned by tubal mole. There are, however, some points of difference which almost necessitate the separate consideration I have given to the hæmatocele of tubal mole and to that of later tubal pregnancy with rupture. The hæmorrhage in tubal mole is of quite a different character from that which occurs in later rupture of the tube. In tubal mole it is a more or less continuous blood-drip from the fimbriated end of the tube, varied perhaps by an occasional little gush of freer bleeding at irregular intervals. In later rupture of the tube the hæmorrhage is sudden and relatively copious arising, as we have seen, either directly from the tear in the tube, or from separation of the placenta, or from both combined. In tubal mole, owing to the slow formation of the blood-tumour the outer layer of blood has time to consolidate, and some measure of true encapsulation, however imperfect, is usually met with. In later rupture of the tube, on the contrary, any "encapsulation is quite exceptional, and the hæmatocele is limited only by the inflammatory adhesion caused by the peritonitis which follows the hæmorrhage. Finally, the whole condition in later rupture of the tube is more acute." The hæmatocele is larger at its onset and rapidly increases in size. It may often be visibly watched enlarging and distending as fresh bleeding takes place beneath the thin limiting adhesions, and it is then accompanied by signs and symptoms proportionate to the severity of the condition.

Mrs —, aged 31, married 11 years, had one child ten years ago, in 1885. From this time she menstruated regularly until Oct 12th, 1894, this being the date of the last normal period. Irregular hæmorrhage followed and continued from October until Jan. 27th, 1895 (the date of operation). During the latter part of this time she was the subject of increasing abdominal pain mainly referred to the right side, accompanied by distension, vomiting, faintness, and constipation. Some jaundice and albuminuria were also present. The temperature was slightly raised, fluctuating from 99° to 101·3° F. In spite of the general abdominal distension a large mass was to be felt on the right side of the abdomen reaching from the groin to the umbilicus, and having in this situation a convex free border and a more or less globular elevation. The abdomen was very tender to touch. The mass had been felt by the patient and observed by her medical attendant as rapidly increasing in size from a small lump above the groin to its present dimensions during the week or ten days before my visit. On vaginal examination a large firm tumour was felt in the pouch of Douglas behind the uterus, and this appeared to be continuous with the abdominal tumour.

The diagnosis having been made of intra-peritoneal hæmatocele due to a ruptured tubal pregnancy, the abdomen was immediately opened. This contained a little coloured serum, but was free from any diffuse hæmorrhage. The mass on the right side, black in colour, was confined by thin adhesions, and the convex border was formed by small intestine, transverse colon and omentum matted together over the surface of the hæmatocele. An opening was made below this, and the child (a fœtus of some two months' growth) together with the placenta were removed from the centre of the blood and blood-clot in which they were lying. The placenta had already become almost entirely detached from the tube by hæmorrhage, and the slightest traction was sufficient to complete the separation. The tubal-sac which had contained the placenta and was the seat of an extensive rupture was found to be lightly adherent beneath the blood-clot. It was separated from the posterior adhesions, unrolled from the floor of the pelvis, ligatured and removed. The patient made a good recovery.

Mrs. —, aged 38, menstruated regularly from the birth of her last child (twelve years previously) until November 1887. In December and January she had occasional loss of blood but no regular period, and from November she suffered from gradually increasing pain in the right side. Early in February 1888 she noticed a "lump" in this situation which rapidly enlarged with corresponding increase of pain, and during the latter part of this month she had been unable to sleep on account of pain. She also suffered from dysuria and frequency of micturition. When seen (on March 4th, 1888) a tender, tense, elastic or semi-fluctuant tumour was found on the right side of the abdomen extending from the pelvis to within a short distance of the umbilicus. The uterus was fixed and pushed to the left by the tumour, and the doctor in attendance reported that the tumour was "rapidly enlarging." I opened the abdomen on March 7th. The tumour, black in colour, was formed by a mass of blood and blood-clot filling the pelvis and right inguinal region, and closed in or separated from the general peritoneal cavity above by adherent omentum. On loosening this a fœtus of four months' growth was found in the middle of the blood-clot, while the placenta was still attached to the interior of the left Fallopian tube in which the pregnancy had started. The tube had become widely opened out at its fimbriated extremity, and this was the only rupture found, but there was some marginal separation of the placenta and this separation was most likely the source of the hæmorrhage. The tube and fœtus were removed in the usual way and the patient made a good recovery.

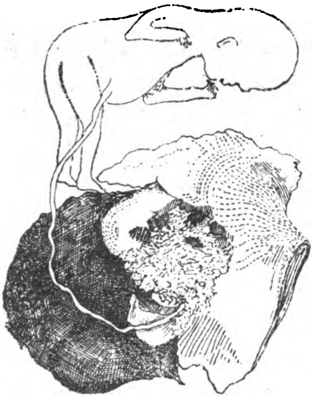

Fig. 18.

During the removal of the pregnancy the amniotic sac was torn and only a portion of it can now be seen. Before operation it was in all probability intact and completely covered the fœtus. If I restore this amniotic sac, replacing the outline of it around the fœtus and cord, and if (for purposes of argument or explanation) it be conceded that the bleeding might have ceased and the portion of placenta separated from the tube have recovered good attachment and blood-supply, we shall reproduce the exact conditions under which a child may continue to grow within the abdomen of the mother—in other words, the tubal pregnancy may be recognised in this specimen as transitional—the tubal pregnancy is already becoming "abdominal."

Here, then, we come to a clear crisis in the history of extra-uterine pregnancy which deserves special consideration. It is a crisis which is not necessarily fatal either to the patient or the pregnancy, and may therefore have far-reaching consequences. Up to this stage the extra-uterine pregnancy has been tubal. Now it is wholly tubal no longer. The placenta, true to the law and power of its attachment, remains mainly or entirely within the tube, but the fœtus has escaped beyond its confines—upward—into the abdomen of the mother. It now lies altogether above the tube and placenta, which remain beneath it, in the pelvis. Directly illustrative, as this specimen is, of the initial steps belonging to only one form of invasion, it may also be taken as a kind of finger-post to mark the "parting of the ways," for the beginnings of the tubo-ligamentary invasion are very similar or parallel to those of the tubo-abdominal form of pregnancy. In both it is the fœtus which escapes from the shelter of the tube, but in the tubo-ligamentary pregnancy the fœtus takes a different direction—downwards—below the tube into the connective tissue beneath the peritoneum. In both the placenta remains attached to the inner surface of the tube.

LECTURE II.

THE THREE INVASIONS OF TUBAL PREGNANCY— (1) TUBO-ABDOMINAL, (2) TUBO-LIGAMENTARY, AND (3) TUBO-UTERINE.

1. TUBO-ABDOMINAL PREGNANCY (SYN., ABDOMINAL OR VENTRAL PREGNANCY).

Mr. Dean and Gentlemen,

When a fœtus which has been already formed within the Fallopian tube escapes from the tube enclosed in its ***unruptured membranes*** into the abdomen of the mother the pregnancy becomes "abdominal" or "ventral." If the placenta retains its attachment to the tube and receives sufficient blood-supply from the maternal blood-vessels the pregnancy may pursue an uninterrupted course to term and both child and placenta attain mature development within the peritoneal cavity of the mother. The protection of the unruptured amnion, however, appears to be absolutely indispensable for this development. I am aware that in making the statement that a tubal pregnancy thus directly becomes abdominal I am running counter to the accepted teaching of such authorities as Mr. Lawson Tait and Mr. Bland Sutton. The difficulty in believing this lay in the fact that in most of the recorded cases the child has been described as lying naked and uncovered within the peritoneal cavity of the mother. Our leading authorities have argued, and probably argued rightly, that no fœtus at any early age could be so exposed to the peritoneal cavity and its secretion and yet survive. They have accordingly sought for some method of explaining how the facts established by observation—the intra-abdominal position of the child—could possibly arise. The theory advanced is that every extra-uterine pregnancy which has survived the primary rupture of the tube and has continued its development has done so beneath the peritoneum, sheltered within the folds of the broad ligament (see Broad Ligament Pregnancy), that here it has remained till the seventh or eighth month, and then a secondary rupture of the broad ligament cyst has taken place, and the child has escaped among the intestines, "its tissues having arrived at a period of development by that time, which enabled them to resist the efforts of digestion which doubtless would be directed towards them."*

Although those of us who had operated on cases of abdominal pregnancy at full term felt that this theory was far-fetched and mistaken, for no broad ligament pouch from which the infant had escaped could then be found, and although the theory was more or less disproved by isolated cases of abdominal pregnancy reported by Dr. Jessop, by Dr. Champneys, by myself, by Dr. Webster, by Dr. Cullingworth, by Dr. Aust Lawrence, and even by Mr. Tait himself, I do not think we could be said to have any good explanation of the mystery to offer until a case on which I operated at the Spark Hill Hospital for Women on Dec. 11th, 1896, brought further light and explained how the child could inhabit the peritoneal cavity of the mother and still survive. On careful examination of the abdominal cavity in this case conducted by myself and my colleagues, Mr. Martin and Mr. Jordan, it was found that a transparent membrane (the amniotic sac) surrounded the fœtus and protected it in every direction, and that this was invisible on the surface of the intestine, but could be demonstrated as a film passing from coil to coil and completing the sac in which the pregnancy had developed. The case was reported by me to the Obstetrical Society of London in 1897, and the following account of the operation and parts removed is copied from the Transactions of the Society.

"*Operation.*—On Dec. 11th, 1896, assisted by my colleagues, Mr. Martin, Mr. Jordan, and Dr. Sturge, I opened the abdomen in the middle line and found that the peritoneum immediately below the incision was thickened and incorporated with some kind of sac containing a dead but non-putrid fœtus. On opening this the child was found lying in the abdomen bathed in a small quantity of dark blood fluid. In this some caseous particles were floating. The head of the child lay uppermost and formed the globular protuberance which had been noticed near the liver. The intestines were visibly covering the body of the child, and the great omentum, forming in one part a thick fleshy body of considerable thickness, passed across the child to a broad attachment on the upper part of the placenta. The latter was situated at the lower pole of the pregnancy and covered the pelvis. The parts of the child nearest to the incision were the lower limbs, and after pulling the feet outside and enlarging the incision to admit of the passage of shoulders and head the child was extracted. The cord was then divided and the child removed. On looking into the abdomen the peritoneal cavity appeared to be directly open as in an ordinary abdominal section. The coils of intestine, the lower part of the stomach, and the great omentum were all plainly visible, and separate loops of intestine could be brought out of the incision and examined. On very close observation it was first noticed by Mr. Martin and afterwards confirmed by myself and Mr. Jordan, that a very thin transparent pellicle or membrane was reflected over all, or nearly all, of these viscera, and that notwithstanding the apparent free exposure of the peritoneal cavity there was in all probability a thin, filmy, transparent sac enclosing the pregnancy, not capable of separation or differentiation from the peritoneum of any viscus over which it was reflected except where passing from one to another, as from one coil of intestine to another or from intestine to placenta. Only under these circumstances was the membrane visible.

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* Tait: Lectures on Ectopic Pregnancy, p. 59.

"*Removal of the placenta.*—The placenta was of ordinary size and covered the pelvic inlet 'like the lid of a saucepan' incompletely closed, the edge of the placenta being exposed and free on the left side of the pelvis but closely applied to the abdominal wall on the right side where the cord was situated. The attachments of the placenta were: (1) a thick band or rope of omentum which was firmly attached to the upper or serous edge of the placenta on the left side; (2) several thin attachments or adhesions of small intestine and cæcum to the same surface; these appeared to be possible of explanation as reflections of the thin sac layer (amnion) from the intestine to the placenta; and (3) the deep pelvic attachments of the under surface of the placenta, which at this stage were hidden from view by the placenta itself. The band of omentum was ligatured in sections and divided; then the adhesions to the bowel were separately tied and cut through. By tilting up the free (left) edge of the placenta it was now possible to discover a broad band of attachment below it in the pelvis. This was seized by a pair of Doyen's elastic forceps and divided. When this had been done a further part became accessible and it was found possible by gentle manipulation to secure either by forceps or ligature all pelvic attachments before separation, so that the placenta was finally removed without any loss of blood, and therefore with a clear field for deliberate operative work throughout. Below the placenta, in the pelvic portion of the sac, was found quite a collection of caseous masses (remains of the vernix caseosa), which was cleared out of the pelvis partly by the fingers and partly by a douche of warm water which was used for washing out the abdomen. The main attachments, which had been temporarily clamped by forceps, were found to come from the right broad ligament. These were ligatured in sections beneath the forceps and the forceps were then removed.

"On examination of the pelvis where the placenta had been it was evident that the same arrangement of sac existed here as in the upper abdomen—that is, a fine transparent membrane could be traced throughout and formed a limiting layer between the usual viscera of the abdomen, pelvis, and placenta on the one hand and the child on the other. On replacing the placenta in position this membrane could be traced below the placenta to the bottom of the pelvis on the right side; it was then reflected over the broad ligament and all its attachments to the under surface of the placenta. From this it could be traced all over the placenta except where intestine or omentum was adherent to its surface. Two-thirds (at least) of the placental margin was free, and this was consequently smooth, glistening, and everywhere covered by the thin membrane of the sac. Owing to this disposition of the sac within the pelvis the outline of the normal pelvic viscera, the uterus, tubes, and ovaries were considerably obscured, so much so that it was impossible to say whether the right ovary had been removed with the placenta or whether it had been left in the pelvis below the reflections of the sac.

"The abdomen was closed with silkworm-gut sutures and a drainage-tube left in the lower angle of the wound. The after-progress of the case was satisfactory and uneventful except for some chronic suppuration in the lower part of the wound. This appeared to be kept up by caseous remains which had been imperfectly removed, as on more than one occasion some caseous particles were observed in the discharges. The patient was discharged convalescent on Jan. 25th, 1897.

"*Description of parts removed.*—The child weighs 7lb. and is a male fœtus which has undergone full development within the abdomen of the mother. The nails of the fingers extend some distance beyond the finger-tips and are firm and horny. The testes appear to be within the scrotum and the hair of the head is abundant but short. The trunk and limbs are perfectly developed; the head is rather large in proportion to the rest of the body and is bent or twisted to the right, so that the left (or extended) side of the neck and face appears to be permanently larger than the right, the head being fixed laterally towards the right shoulder. There are no signs of decomposition. Closely applied to the head of the child is a perfect cap of membrane and between this and the head of the child is a considerable quantity of caseous matter. This is the only part where any membranous covering or sac can be distinguished. The umbilical cord and its fœtal attachment are in every respect normal. The placenta weighs 3lb.; it is thick and fleshy and of fairly normal consistence. On its upper surface and edge it is marked by (1) the insertion of the cord excentrically placed; (2) by the attachment of a divided thick band of tissue, probably omental; and

(3) by several large distended vessels almost unsupported by any tissue, but directly attached to the placental surface or edge. (These appear to be portions of adherent omentum which have been changed into congeries of dilated veins.) The shape of the placenta is peculiar; the bulk of it is circular, with an excentric cord inserted near one border (the right). Beyond this and separated from it by a deep sulcus is a crescentic mass of placental tissue attached to the main placenta by its horns and lower surface. On the surface of this crescentic part is a pale red fringed mucous patch, which appears to be the fimbriated end of a Fallopian tube. No further trace of tubal structure can be made out on macroscopic examination and on section of the mass it appears to consist throughout of placental tissue. The under surface of the placenta is in many parts as smooth and free as its upper surface, but it is marked by a long strip of raw surface running across the placenta, with a bend or angle in its course. This marks the attachments of the placenta to the right broad ligament.

"*Remarks.*—The pregnancy may be regarded as originally one of the right Fallopian tube, which, by gradual erosion or giving way of the upper part of the tube, has passed with unruptured membranes into the abdominal cavity. The deep sulcus on the upper surface of the placenta probably marks the line of separation in the tube where the ovum escaped upwards into the abdomen. From the spread out internal surface of the (ruptured) tube the placenta has continued growing and has so altered or taken up its structure in process of growth as to render little but the fimbriated end recognisable. The placenta has derived its blood-supply from the vessels of the broad ligament and from the great omentum.

"The case is remarkable for possessing no history of any tubal rupture (or acute illness corresponding to this) throughout the whole course of the pregnancy. The conditions and opportunities for observation during the time of operation were unusually good, but in spite of this the exact state of the upper pole of the pregnancy and its relation to the abdominal viscera must be determined by circumstantial evidence as it could not be directly seen from the incision. From the fact that the head of the child is closely covered by a cap of membrane, between which and the scalp is a copious deposit of caseous material, while below this any evidence of a membranous sac is wanting (except the tear of separation around the forehead and occiput), it may be concluded, I think, that the upper part of the amniotic sac—the membrane forming the extreme upper pole of the pregnancy—has been removed with the fœtus; and that, so far as this is concerned, the abdominal cavity has been directly opened. Below this, towards the centre of the pregnancy, the sac has become incorporated with the peritoneum so that no separation could be made between the two and no indication of the presence of a sac could be seen except at its reflection from one viscus to another as already described. At a lower level still—at the 'lower pole' of the pregnancy—the sac was considerably thickened, forming, together with the peritoneum at the lower part of the abdominal incision, a membranous wall fully one-eighth of an inch in thickness. Even here, however, no definite dissection could be made between 'sac' on the one hand and 'peritoneum' on the other."

The importance of the case just quoted in the present state of our knowledge cannot be over-estimated. It effectually disposes of much of the theory now current on the subject of advanced extra-uterine gestation. On page 464 of Allbutt and Playfair's System of Gynæcology (1896) Mr. Bland Sutton writes: "Observation has demonstrated the fact that in all tubal pregnancies which survive the primary rupture and continue their development the gestation sac is formed in part by the expanded tube, but mainly by the layers of the mesometrium. The proper appreciation of this fact has done much to simplify our knowledge of tubal pregnancy, and no one has more strongly insisted upon its correctness than Lawson Tait." That this is altogether mistaken is now, I believe, a certainty. The case of abdominal pregnancy here described is a tubal pregnancy which has survived the primary rupture and continued its development, in which the gestation sac is formed by the amnion alone or at most by the fœtal membranes and tube, the layers of the mesometrium are intact, and the expanded tube is entirely taken up and metamorphosed by the growth of the placenta.

A diagrammatic representation of the pregnancy (Fig. 19) in which the omental attachments are omitted as non-essential, may help to make this important variety of extra-uterine pregnancy clearer and to elucidate the relations of its sac. The essentials of the pregnancy are the fixed placenta growing mainly or entirely from the tube to which it was originally attached and the child enclosed simply in its amniotic sac, moving so far as the delicate sac permits it within the abdomen of the mother. The amniotic sac may be in some places separable from both mother and child, in other parts it may be quite inseparable from the peritoneal covering of the abdominal viscera within the maternal abdomen. The condition is produced in the most simple manner. The pregnancy begins within the tube and grows there until it can grow no longer. Then by rupture or by some slow separation of the tube equivalent to rupture the tube is opened up. The child within its amniotic sac escapes upwards into the abdomen, the placenta remains attached to the inner surface of the tube, and from this, spread out and flattened by the rupture, the placenta continues to grow.

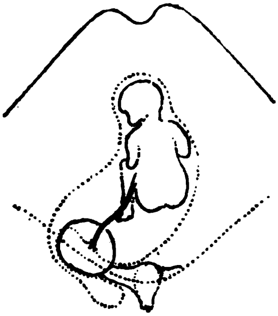

Fig. 19.

But this case not only tends to disprove the broad ligament theory as of universal or even general application. It serves another and more important purpose. If the cases of abdominal pregnancy be carefully considered in the light of the explanation here offered it will be found that most, indeed very nearly all, of the recorded cases in which no definite sac has been found admit of a similar interpretation. In Mr. Jessop's case it is stated that "the peritoneal lining, though natural on its free surface, appeared thick and velvety in section," and later we read: "A few bands of unorganised lymph of a very friable nature lying upon, but not adherent to, the intestines were readily removed by sponging and about an ounce of a clear serum was found in the peritoneal cavity." The definite amount of serum here mentioned is decidedly suggestive of some unrecognised limiting sac and not of free fluid welling up from the pouch of Douglas out of sight. In Bandl's case, quoted by Mr. Tait, the fœtus was enclosed in a "pocket formed by false membranes." In Dr. Champneys' case the references to some filmy kind of sac are still more obvious. We read: "The layer immediately covering the fœtus was a dull white membrane." Again: "On the child's vertex a patch of thin, sodden-looking membrane was seen, and except a shred of similar material removed from the wound (probably torn from the head during delivery) no membranes were seen or felt." In the report of the dissection of the child we read: "There was a sort of cap of sodden membrane (amnion) on the vertex which was covered with dark hairs," and in the report of the necropsy of the mother: "The fœtal surface [of the placenta] was also marked by a remnant of membranes which hardly extended beyond the placenta." The similarity between this case and those which I have myself reported is, I think, clear and unmistakeable.

(To be continued.)

REVIEW OF THE BRITISH PHARMACOPŒIA, 1898.

BY F. H. ALCOCK.

THE publication of a new British Pharmacopœia, which is the fourth, and is to supersede that of 1885 and its additions of 1890, is of great importance to the medical profession, the pharmaceutical body, and the public. The book was gazetted early in May, and was on sale after the 11th of that month. It becomes now the authoritative formulary of the medical man, and it is the duty of the dispenser to conform to official requirements. As will be seen from its introductory pages, many alterations, deletions, and modifications have been made. The book itself is well printed, and is bound in cardinal red, the size and appearance being otherwise like its predecessor. The number of pages is about the same, but more space has been devoted to literary matter than formerly, owing to the deletion of cross references.

In the Preface an account is given of the chief alterations which have taken place, together with a statement that information has been sought and obtained from all parts of the Empire as to the value of obtaining uniformity in the strength of medicinal preparations. Valuable aid has been obtained from the Pharmaceutical Society, and the whole has been under the direction of Prof. Attfield as editor and scientific adviser, acting under a special committee of the Medical Council, with the late Sir Richard Quain as chairman.

The Metric System of weights and measures is for the first time introduced. They take the place of the column which in the 1885 B.P. was devoted to parts by weight and volume. The Imperial System of weights and measures is still used, for it should be carefully observed that the metric system is not given as the equivalent of the other. It is feared that much complication and confusion may arise from this dual arrangement.

Reference is made to the great alteration in the official strengths of alcoholic liquids, no less than five new strengths being prescribed. The principle of standardization of Galenical preparations has been extended to such potent remedies as Belladonna and Ipecacuanha, and, indeed, the pharmacy of these, and of Nux Vomica, Opium, etc, has been revolutionised. Special mention is made of a new series of preparations, "Liquores Concentrati," nine in number, "which may be prescribed by practitioners in place of the corresponding official infusions." Whether they are to be used by the dispenser in place of *fresh* infusions is one which requires an official statement. We believe they are not, for no concentrated preparation after dilution can compare favourably with a freshly made infusion or decoction in medicinal value or in any other direction.

Uniformity in the strength of most of the Liquid Extracts (1 in 1) has been maintained; and an attempt at unification of doses has been made, notably with regard to solid extracts and tinctures. This will be found of great value to the busy practitioner. Eighty new articles and preparations have been introduced. These have been drawn from the vegetable kingdom chiefly: thus, Caoutchouc, Oleum Rosæ, Pix Carbonis Præparata, Pruni Virginiani Cortex, Quillaiæ Cortex. Chemicals are represented by Cocaina, Benzol, Naphthol, Bismuthi Salicylas, Carbonis Bisulphidum, Paraffinum Liquidum, Salol, Terebenum; and animal products are represented by Liquor Pancreatis, Liquor Thyroidei, and Thyroideum Siccum. Of the preparations and articles rendered familiar to us by the B.P. 1885 and additions 1890, no less than 188 disappear. Some of these will not be missed, notably acetum, lac, mel, farina tritici, theriaca, uvæ, ovi vitellus, ovi albumen, manna, mica panis, and other dietetics; and such representatives of extemporaneous pharmacy as enemata, vapores, cataplasmata, essentiæ. Of Decocta, out of 13 only 3 remain: 17 Extracts have disappeared; 7 Infusions; 15 Liquores; 11 Tinctures. Others which have been deleted are notably, extractum aloes socotrinæ, syrupus papaveris, tinct. zingiberis fort. (essence of ginger), liq. ammon. acet. fort., and liq. ammonii citratis fort., which will cause us to ask on what grounds.

An important list follows, viz., one containing 116 preparations and articles the names of which have been altered. This will cause older medical men much trouble, but happily they can console themselves that the changes are not great and are chiefly with regard to names which have been brought more up to date.

There has been some curious juggling with names: Coca, of 1885, now becomes Cocæ Folia; Cubeba becomes Cubebæ Fructus; Ergotinum, Extractum Ergotæ; Gelsemium, Gelsemii Radix; Ipecacuanha, Ip. Radix; but Lini Farina (Linseed meal), becomes Linum Contusum (lit. bruised linen); Lini Semina, Linum; Cascarillæ Cortex, Cascarilla. All these are unnecessary and serve no useful purpose. The new spelling of Asafetida and Creosotum is noteworthy. The green extracts of Hyoscyamus and Belladonna have "Viride" attached; hydrochloras becomes hydrochloridum; arsenias, arsenas; Tinct. Rhei, Sennæ, Chlorof. et Morph., Troch. Bismuthi, have each "Co." added; but Lin. Camph. Co., Lin Saponis Co., have dropped the "Co.," and the former has in its place "Ammoniatum." Lin. Iodi is now called Liq. Iodi Fortis, and Liq. Iodi disappears.

Amongst the 58 articles and preparations the *composition* of which has been altered, may be mentioned:—Ext. Physos. is one-quarter its former strength, and contains 75 per cent. of sugar of milk; Ext. Nuc. Vom. contains 5 per cent. strychnine. Inject. Morph. Hypodermica is made from the Tartrate, and is half its former strength. Lotio Hydrar. Nigra contains Glycerine and Mucilage of Tragacanth. Mist. Ol. Ricini is now a nice palatable emulsion, with an Acacia basis, in place of the preparation of the Additions, which was made with Liq. Potassæ, etc., and ruined the reputation of many a young, well-bred pharmacist. Pil. Ferri has a new formula, in which dried Ferrous Sulphate and Sodium Carbonate are massed together with a Tragacanth, Acacia, Syrup, and Glycerine excipient.

Tinct. Chlorof. et Morphinæ is entirely altered, and will be referred to later. All preparations which formerly contained Saffron have not now this ingredient, except its Tincture, Tr. Cinchon. Co. and Dec. Aloes Comp. A great change in their colour may therefore be expected. Vinum Quininæ now has Quin. Hydrochlor. in place of the Sulphate, and Citric Acid is omitted therefrom.

The bases of the Lozenges and Ointments have been altered. The strengths of 94 preparations have undergone alteration, notably among these being infusions (6), spirits (7), tinctures (40), and ointments (22). A few articles which were formerly mentioned in the text have been transferred to an appendix; they are now chiefly used for chemical testing. To give some idea of the use of the pruning knife, it may be stated that out of nearly 600 preparations only about 90 remain unchanged.

Drugs.—An examination of the text shows that special attention has been given to the description of the characters and tests of the articles enumerated, but as a rule the method of *collection* and preservation of drugs and their geographical source are not recorded. Aconite root, which has to be collected from British plants, is almost the only instance of a drug so specialised.

Chemicals—The methods for making chemicals—an important feature of previous pharmacopœias—are now omitted, but their identity and purity are safeguarded by elaborate, and in many cases expensive, tests, which are enumerated with a characteristic thoroughness. Examples of this are seen under Acidum Lacticum, where a whole page is devoted to characters and tests, and similarly, under a by no means important substance, Balsam of Peru. Under Quininæ Sulphas a page and a half is devoted to the tests for this, and to properly conduct the experiments half an ounce at least of the substance would be necessary. Under the new order of testing the thermometer, polarimeter, microscope, barometer, and other instruments are an absolute necessity, and the determination of melting points, boiling points, congelation points, specific gravities, solubilities, and, in the case of many drugs, the amounts of mineral matters, are of constant occurrence. Chemical formulæ are brought more in line with modern thought; innocent citric acid rejoices in this—$C_3H_4.OH.(COOH)_3, H_2O$, and hydrogen citrate is its synonym. The formula for oleic acid would take up so much space to express that we have decided not to give it. There is really no necessity for such absurdities, and, moreover, the authorities are not consistent. If hydrogen citrate, etc., why not hydrogen salicylate, gallate, benzoate? The familiar slaked lime was formerly called hydrate of lime in 1867, then came calcium hydrate in 1885, and now calcium hydroxide is the name by which it is to be known. The alkaloids—which constitute a highly potent class of complex substances—have no mode of preparation given, a matter of extreme regret, for their preparation is unfortunately mainly in the hands of German chemists, and the introduction of really good methods of production might be an inducement for English chemists to undertake their manufacture. Of new official alkaloids and their salts we may mention Cocaina, Codeinæ Phosphas, Hyoscinæ Hydrobrom., Hyoscyam. Sulph., Morph. Tartras, Physotig. Sulphas, Strychninæ Hydrochloridum.

Galenicals.—These preparations have undergone the greatest change, and we hope and believe that it is, except in a few cases, for the better. Taking them in alphabetical order, we observe that the vinegars and acids have not undergone any alteration in strength. Of the medicated waters chloroform water is now half strength (an important change); cinnamon and pimento waters are weaker; and to our surprise, the uncertain and unsatisfactory Aqua Laurocerasi still is official. The official representative of the popular mustard leaves—Charta Sinapis—has now an Indiarubber basis. Vesicating Collodion is now double its former blistering strength. Confection of Sulphur now contains glycerine, syrup, and tincture of orange. Compound Decoction of Aloes is made from Ext. of Barbados (formerly Socotrine) Aloes, and Decoction of Pomegranate is of double strength. Belladonna Plaster is made from the liquid extract of the root, and is standardised to contain 0·5 per cent. of its alkaloids.

Liquid Extracts have four important additions to their number, viz., Liquid Extract of Belladonna Root, for making all other official Belladonna preparations. It is made by re-percolation with 90 per cent. alcohol, and without heat, and contains 0·75 per cent. alkaloids as indicated by the given test. Liquid Extract of Ipecac. is a standardised extract, containing 2·25 per cent. of alkaloids; it is obtained by percolation of the root, first with alcohol 90 per cent. alone, and afterwards with lime and alcohol until exhausted. Dose, ½ to 2 ♏. It is used for making the official liquid Ipecac. preparations. Liquid Ext. of Jaborandi is new, and obtained by the solvent action of 45 per cent. alcohol upon the leaflets. Strength 1 in 1. Dose, 5 to 15 ♏. Liquid Extract of Nux Vomica is also standardised, and is obtained by exhaustion of the seeds with 70 per cent. alcohol, and adjusting to the strength of 1·5 per cent. strychnine as indicated by the official test. It is used for making the tincture. Liquid Extract of Opium is now weaker—0·75 per cent. morphine *vice* 1·0 per cent.

Amongst Solid Extracts one is new—Ext. Strophanthi. It is made by exhausting the oil-freed seeds by 90 per cent. alcohol, evaporation of the percolate, and addition of milk sugar so that 2 oz. represent 1 oz. of seeds. Extract of Belladonna Root has 1 per cent. total alkaloids and contains sugar of milk. The Green Extract made from the fresh leaves is still official and has a similar dose. Extract of Ergot is a greatly improved process, and contains a little common salt incidental to the mode of procedure. Extract of Euonymus has calcium phosphate in place of sugar of milk. Extract of Calabar Bean is one-fourth its former strength. Extract of Nux Vomica is now standardised to contain 5 per cent. strychnine (formerly 15 per cent. strychnine and brucine). Some minor but unimportant changes have also been made amongst the other solid extracts.

The Glycerina have two new ones—one, an official modification of Barff's Boro-Glyceride; the other, an acid glycerol of official Pepsine. Both have been much known and used for some time past.

The Infusions were formerly 28, now only 21 remain, a new one being Inf. Scoparii in place of the old decoction. The strength of Inf. Cascar. is half what it formerly was. All are made to pint quantities, and generally 15 minutes is the time for maceration. The Hypodermic Injections are increased by that of Cocaine, which formerly had a place in the Additions as a liquor. Inject. Morph. Hypoder. is half the former strength, and is now made with Morphine Tartrate.

The therapeutic effects of the Liniments will not be different from the previous ones, but Lin. Camph. Co. is now called Lin. Camph. Ammoniat. Soap Liniment is now made with soft soap, and Lin. Sinap. is without the extract of mezereon.

The Liquores Concentrati are a new series of pharmaceutical preparations, which are no doubt intended to supersede concentrated infusions. They are weak tinctures, and prepared of a general strength 1 in 2. They are Calumba, Chiretta, Cusparia, Quassia (1 in 10), Rhubarb, Senega, Senna (1 in 1), and Serpentary. We do not observe that Gentian is represented.

Blistering Liquid is now twice the former strength. For the benefit of those who believe that Sp. Æther. Nit. is indefinite in composition and variable in action, a solution of pure Ethyl Nitrite in absolute alcohol and glycerine is introduced. Another new liquor is a representative of Hazeline, a hydro-alcoholic solution of the volatile oil obtained by distillation from the fresh leaves of Hamamelis. Liniment of Iodine is now called Liq. Iodi Fortis, and in place of Liq. Morph. Bimecon. we find yet another solution of morphine, the Tartrate. A representative of the popular Liq. Pancreaticus occurs in Liq. Pancreatis, which is a weak alcoholic solution of the enzymes contained in the fresh pancreas of the pig. Liq. Picis Carbonis is a tincture of coal tar and quillaia bark. A concentrated compound solution of sarsaparilla represents in a concentrated form the old-fashioned compound decoction. Liq. Thyroidei is a preparation of the thyroid gland of the sheep, 100 min. = 1 gland. The number of effervescent preparations is increased by that of Lithium Citrate, 5 per cent., and Caffeine Citrate, 4 per cent. Black wash is improved by the addition of Glycerine and Mucilage of Tragacanth, which diffuses the precipitate better.

In the Misturæ, Tragacanth replaces acacia in chalk and guaiacum mixtures with advantage. Castor oil mixture is a palatable and serviceable method of administering this useful but unpleasant remedy. Black Draught now contains a little aromatic spirit of ammonia.

The formulæ for the Pills have now undergone slight alteration, chiefly, however, in the use of a mixture of glucose and syrup (under the name of Syrup of Glucose) as the excipient. The Iron and Phosphorus Pills have improved formulæ, and a Quinine Pill is new.

The familiar colour of Aromatic Powder of Chalk is not now observed, because the saffron is omitted; otherwise no change is observed in the official powders.

The official Spirits have undergone a great change as regards their strength, and two new ones have been introduced, viz., Sp. Anisi, Sp. Menthæ Piperitæ. These were formerly official as Essentiæ, but are now 10 per cent. by volume. The Spirits of Cajuput, Cinnamon, Lavender, Peppermint, Nutmeg, and Rosemary are five times their former strength, and that of Juniper 2½ times. The familiar terms "proof spirit" and "rectified spirit" have now no official significance, their place being taken by alcohol of 90, 70, 60, 45, and 20 per cent. by volume. The authorities have not introduced any characters and tests for Brandy. The Suppositories of Belladonna are now prepared with the alcoholic extract of Belladonna root, and each contains 1-60th gr. of its alkaloids. Morphine suppos. are half their former strength, and the Soap and Mercurial Suppositories are not now official.

The class of Syrups is still unsatisfactory: Aromatic Syrup, Syr. Calcii Lactophosph., Syr. Cascar. Arom., Syr. Codeinæ, a representative of Easton's Syrup, Syr. Glucosi, Syr. Pruni Virg., are all new. Syr. Ferri Iod. is now 10 per cent., and Syr. Ferri Phosph. is much less acid than formerly. It is somewhat remarkable that weak alcohol is used for the preparation of Syr. Sennæ, whilst for the concentrated Liquor water is used as the solvent; and in the Tincture 45 per cent. alcohol is used, which, in our opinion exhibits glaring inconsistencies.

Thyroideum Siccum, a new representative of organo-therapy, is prepared by drying finely-minced healthy thyroid glands (sheep), and subsequently removing the fat by treatment with petroleum ether; its dose is 3 to 10 grains.

The important class of Tinctures has undergone great changes, both in strength of active ingredient and in alcoholic strength. The intention has been to obtain some uniformity of dosage. Thus, Tr. Aconiti is now 1 in 20 as against 1 in 8, but the dose remains the same. Tr. Arnicæ, which formerly had a dose has none stated now. It appears to have suffered diminution to the vanishing point, for the B.P. 1867, the dose was 1 to 2 fl. dr.; then in 1885 it was ½ to 1 fl. dr.; now it has none at all. Presumably it is not intended for internal administration. Tr. Asafet., now 1 in 5, formerly 1 in 8, has now the same dose as before. Where Tincture of *dried* Bitter Orange Peel was official, the *fresh* peel is now used. Tr. Bellad. is now prepared from the Liquid Ext. of Belladonna root, and must contain a definite quantity of alkaloid. It was formerly made from the leaves. Similar alterations have been made throughout the whole of the tinctures, which do not call for special comment. Compound Tinct. of Chloroform and Morphine, which belongs to the "Chlorodyne" class, is now a clear, bright-green tincture, from the presence of Tr. Cannab. Indic., and is four times stronger in alkaloidal power than formerly. Treacle, Syrup, Ether, and Liquorice are absent, and Glycerine is added. The Ammoniated Tinctures of Guaiacum and Valerian do not now contain ammonium carbonate, but liq. ammon., with volatile oils of nutmeg and lemon. There are only three new tinctures—Tr. Ergot. Ammon., Tr. Pruni. Virg., Tr. Quillaiæ. Eleven tinctures have been deleted, none of which will be missed, except, perhaps, the strong tincture (or Essence) of Ginger.

The Lozenges have suffered change as far as their basis is concerned. Some are made with a simple gum and mucilage basis, without any flavour, others a fruit basis, a tolu-flavoured basis, and a rose basis. Those of Carbolic Acid (1 gr.), Eucalyptus (1 gr.), Guaiacum Resin (3 gr.), Krameria (1 gr. of Extract with 1-20 gr. of Cocaine Hydrochloride) are new, but we do not find the Ant-Acid Lozenge (Troch Mag. cum Creta), suggested by Sir William Roberts, official.

The class of Ointments have suffered change as far as strength and basis are concerned. Rose Water Ointment (which has long been known as Cold Cream) is now official for the first time. Capsicum Ointment, a representative of the well-known Chilie Paste, is also new, together with Ung. Paraff, which supersedes Ung. Simplex (not now official). It is very questionable whether this further extension of a paraffin ointment base is a good one from a therapeutic point of view. Certainly its penetrating power is much less than that of lanolin and lard. The chief point in its favour is that it resists the action of chemical substances when incorporated with it, but that difficulty could be overcome by requiring the ointment to be freshly prepared. Ung. Cocainæ has a basis of lard and oleic acid, in the latter of which cocaine is soluble. A similar principle is involved in the preparation of other alkaloidal ointments. A representative of Golden Ointment occurs in the form of Ung. Hydrarg. Oxidi Flavi, and the ointment of Mercuric Oleate is also new. This oleate and that of zinc are prepared by the plan originally devised by Dr. Shoemaker, of U.S.A., who did much to make these popular. They are prepared by the double decomposition of a solution of Castile soap and the required metallic salt.

The Wines have not suffered much change, that of Ipecacuanha being now prepared by the addition of 1 oz. of the fluid extract to 19 oz. of sherry. Special tests are introduced to eliminate wines which have salicylic acid as a preservative.

An attempt has been made throughout the preparations of the Pharmacopœia to obtain a unification of dosage. This will be of great service to the busy medical practitioner. The following synopsis will show this in a striking manner:—

Vinegars.—Ten to 30 minims. Exception, A. Cantharidis (not taken).

Diluted Acids.—Five to 20 minims. Except A. Hydrocy. dil., 2 to 8 ♏., and A. Carbol. Liq. 1 to 3 ♏.

Medicated Waters.—Half to 2 fluid ounces. Except A. Laurocerasi, ½ to 2 fl. dr.

Confections.—Sixty to 120 grains.

Solid Extracts.—The doses of these vary between 1 and 15 grains, except the following, which are ¼ to 1 grain:—E. Bellad., E. Cannab. Indicæ, E. Colchici, E. Nuc. Vom., E. Opii, E. Physostig., E. Stramon., E. Strophanthi. The following are 2 to 8 grains:—E. Anthem., E. Ergotæ, E. Coloc. Co., E. Gentian., E. Hyoscy. Viride, E. Jalapæ, E. Rhei.

Infusions.—½ to 1 fluid ounce. Except I. Digitalis, 2 to 4 fl. dr., I. Scoparii, 1 to 2 fl. oz., I. Sennæ (as a draught) 2 fl. oz.

Hypodermic Injections.—H. I. Cocain. 2 to 5 ♏, also H. I. Morphinæ; Apomorph. 5 to 10 ♏, also Ergotæ, 5 to 10 ♏.

Concentrated Liquors—Half to 1 fl. dr. Except Serpentar. 1 to 2 fl. dr.

Poisonous Liquors.—Variable between 2 to 10 ♏. Except Liq. Trinitrini, ½ to 2 ♏.

Mixtures.—Half to 1 fl. oz. Except M. Ricini ½ to 2 fl. oz., M. Sennæ Co. 1 to 2 fl. oz.

Pills.—Four to 8 grains. Except P. Ferri 5 to 15 grs., P. Phosphori 1 to 2 grs., P. Plumbi c. Opio 2 to 4 grs., P. Sapon. Co. 2 to 4 grs.

Powders.—Variable doses from 10 grains (or less) to 40 grains (or more). Except P. Antimon. 3 to 6 grs., P. Elaterini Co. 1 to 4 grs., P. Opii Co. 2 to 10 grains.

Effervescent Powders.—Thirty to 120 grains.

Spirits.—Twenty to 40 minims. Except Sp. Anisi 5 to 10 ♏, Sp. Juniper 20 to 60 ♏, and the following seven which are 5 to 20 ♏:—S. Cajuput, Camphor, Cinnam., Lavandul., Menth. pip., Myrist., Rosmarini.

Preserved Juices.—S. Belladonnæ, 5 to 15 ♏. The following three are 1 to 2 fl. dr.:—S. Conii, S. Scoparii, and S. Tarax.

Suppositories.—One for each administration.

Syrups.—Fifteen have ½ to 1 fl. dr.; the rest have ½ to 2 fl. dr., viz., S. Chloral, S. Codeinæ, Cascaræ, Aromat., Rhei, Sennæ.

Tablets.—One to two.

Tinctures.—The following have a dose of 5 to 15 minims, and their strengths have been altered where necessary:—Aconiti, Bellad., Cannab. Indic., Canthar., Capsici, Cocci, Colchici Sem., Croci, Digitalis, Ferri Perchlor., Gelsemii, Lobeliæ, Æther, Nuc. Vom., Opii, Podophylli, Scillæ, Stram., Strophanthi. All the rest have a dose of ½ to 1 fl. dr. except Tinct. Iodi 2 to 5 ♏. It is to be noted that when a dose is often repeated it is generally stated smaller, and when given singly it is generally stated larger.

Lozenges.—Not now stated; formerly 1 to 6 per diem, except Troch. Ipecac., 1 to 3.

Wines.—10 to 30 ♏, except the Iron Wines, 1 to 4 fl. dr., and Quinine Wine, ½ to 1 fl. oz.

The doses of the crude drugs have in 39 instances been given, but we are still of opinion, as expressed in our review of the B.P. 1885, that this requires amplification. If it is necessary to give the dose of Asafetida and Nux Vomica, it is equally important that that of Myrrh, Gelsemium, etc., should be stated. Again, the dose of all alkaloids should invariably find a place in the Pharmacopœia. The new alkaloidal salts have in some cases their doses added, but none is recorded under Aconitine, one of the most virulent poisons known, nor under Cocaine.

The volume concludes with a very long index, in which the preparations, their doses and strengths, are recorded, together with the page of reference. This is useful, but, we venture to think, is far from complete, especially in the omission of so many strengths. The usual appendices are included without much alteration. The printer's errors are remarkably few; we have been able to discover only one, viz., on p. 200 "slightly" has the second "l" omitted.

ON THE CLINICAL CHARACTERISTICS OF TERTIARY SYPHILITIC DISEASES OF THE JOINTS.*

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In speaking of syphilitic diseases of the joints, it is my intention to confine my remarks to those affections which are directly due to syphilis, which concern the actual joint structures themselves, and which occur during the tertiary stage of the disease.

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* A Paper read at the Birmingham and Midland Counties Branch of the British Medical Association.

It was Richet who, in the Memoirs of the Academy of Medicine of Paris, in 1853, first definitely drew attention to the occurrence, in syphilitic patients, of clearly marked articular lesions. Since then Lancereaux, Bumstead, Hutchinson, Bowlby, and others have written upon the subject and have proved that such cases are more common than was at one time thought; but, still, they are sufficiently rare to make any case met with worthy of close attention.

Tertiary syphilitic articular affections may be divided into two main classes:—

1. Those in which the articular ends of the bones are primarily and chiefly affected, the synovial membrane being implicated secondarily.
2. Those in which the synovial membrane is primarily and chiefly affected.

This second class may be divided into—

(*a*) Cases in which the synovial membrane is diffusely infiltrated and thickened.

(*b*) Cases in which isolated gummata occur in the synovial and sub-synovial tissues.

This classification holds good both for hereditary and acquired syphilis.

Of the first form, viz., where the bone-ends are principally affected, I have, in the General Hospital out-patient room, met with two examples, of which the following are the chief details:—

Case 1.—A man, aged 43, came to the Hospital on April 20th, 1895, complaining of swelling of his right elbow. He stated that he had suffered from primary syphilis 16 years before, and that, since then, he had frequently been troubled with "breakings-out" on his arms and legs. He had never had gonorrhœa. In 1893 the right elbow was swollen, but had recovered. Four months before he came to the Hospital his right elbow became swollen and painful, and had remained so since. The pain was markedly worse at night, but was never so severe as to prevent his working, and this is worthy of notice, for his work was heavy, being that of a labourer in some sandpits. He said that he had been treated for rheumatism, but with no improvement. When I saw him the right elbow was considerably swollen. The lower end of the humerus and the olecranon were thickened in a regular and uniform manner; while the synovial membrane was generally swollen and was doughy to the touch, but nothing resembling an isolated thickening could be felt. There was a small amount of fluid in the synovial cavity. The skin over the joint was perfectly normal in appearance. The movements were free, though the joint could neither be flexed nor extended to quite the full extent, and passive movement was perfectly painless. The thickened humerus and olecranon were tender on pressure. There was no muscular wasting.

Case 2.—A man, aged 27, came to the out-patient room on April 16th, 1896, complaining of swelling of the left elbow. He stated that in 1892 he had a hard chancre, and that during the autumn of 1895 he had a swelling on the back of the right hand and wrist. For the appearance of this swelling he could not account, but he remembered that it remained for some time and finally disappeared under medicinal treatment. For six weeks before he came to the Hospital his left elbow was swollen and slightly painful. When I saw him the joint was markedly swollen and the lower end of the humerus thickened, especially on the inner side, the bone being tender on pressure. The upper end of the ulna was not thickened. The synovial membrane was swollen and felt soft and doughy to the touch. In this instance, as in Case 1, the synovial thickening was perfectly uniform and the joint contained a small amount of fluid. The skin over the joint was unaltered in appearance. The muscles of the arm and forearm were wasted.

In each of these cases iodide of potassium was given, with resulting rapid improvement. At the end of three weeks the synovial swelling had disappeared, and there was no pain or tenderness; but as was to be expected, there was still some bony thickening. In neither case was the joint fixed on a splint.

These two cases are good examples of that form of syphilitic arthritis in which the articular ends of the bones are chiefly affected. In such cases the most marked symptoms are bony thickening, with sooner or later some synovitis, the synovial membrane being considerably thickened and often feeling pulpy on touch, in fact much like a tubercular synovial membrane. But the main symptoms distinguishing this from other forms of arthritis are the freedom of movement and the comparative absence of pain. In each of the above-mentioned cases movement was almost unimpaired and practically painless. There was the usual night pain characteristic of osteitis, but there were none of the pain and rigidity generally met with in cases of rheumatoid and tubercular arthritis.

The next case is one of tertiary syphilitic synovitis of the diffuse variety.

Case 3.—A boy, aged 18, came under my care in Dec. 1895, suffering from hereditary syphilis. He had ulceration of the face with necrosis of the nasal bones and superior maxilla, old kerato-iritis and osteitis of the shaft of the right tibia. He was treated with iodide of potassium and perchloride of mercury and the ulceration rapidly healed. Four months after this the patient came up again complaining of swelling of the left knee of a few months' duration. On inspection it was evident that there was a great deal of synovial swelling in the affected joint. The skin over the joint was normal in appearance and there was no muscular wasting. To the touch the synovial membrane felt thickened and doughy, in fact exactly like a tubercular synovial membrane. There was a small quantity of fluid in the joint. The bone ends were not thickened. The patient was able to walk without a limp, and the movement of the joint was perfectly free and painless. Perchloride of mercury and iodide of potassium were again prescribed, and at the end of a fortnight the synovial swelling had greatly decreased. After two months' treatment the swelling had disappeared; but a few weeks longer it recurred. However, it again disappeared under treatment and the joint has remained sound ever since. The limb was not fixed on a splint.

This case showed well the symptoms of chronic syphilitic synovitis. The condition found in such cases closely resembles that found in cases of tubercular synovitis, for in each instance there is the same main symptom, viz., the thick, pulpy, doughy synovial membrane, with or without a small amount of fluid effused into the joint. In the case just described there was such ample evidence of syphilis that the diagnosis was rendered easy, but, had it not been so, there was one point about the joint which at once attracted attention, and that was that, despite the large amount of thickening, movement was perfectly free, and under no circumstances did the patient feel any pain in the joint. This absence of pain is a very frequent, but not invariable, characteristic of this form of syphilitic synovitis. It may be noted that the effect of treatment was much more tardy in Case 3 than in Cases 1 or 2, but it is a well-recognised fact that the diffused tertiary syphilitic synovitis is slow in clearing up and is prone to relapse.

Case 4.—A man, aged 36, came to the Hospital on February 16th, 1897, complaining of several small swellings about the right knee. He denied ever having had syphilis, but admitted, when asked the origin of a scar on his prepuce, that it might be the result of a sore that he had when a young man. When he came to the out-patient room he had, in the position of the upper part of the synovial membrane of the right knee, a thickened, indurated patch, 1½in. by 1in. in size, with a fairly clearly marked outline. The patch was deeply situated, but was not attached to the bone, while the skin over it was just becoming adherent and was dusky red in colour. An exactly similar patch could be felt to the inner side of the patella. The head of the right fibula was thickened. There was no fluid in the joint and no general synovial thickening, nor was there any muscular wasting. The joint could be freely and painlessly moved. The patient gave the history that the lump above the patella had appeared six months before the above mentioned date, and the lump to the inner side of the patella two months after the first. He said that at first the skin and subcutaneous tissues were perfectly free and had only quite recently become involved. The joint had been fixed for some weeks in a leather case, but no improvement had resulted. The symptoms agreed with those caused by gummata of the synovial membrane, which occur as isolated, thickened patches, with or without general synovial infiltration. There is as a rule no pain, and the function of the joint is not necessarily interfered with. An important characteristic of the affection is that the epithelial lining of the membrane generally remains intact, while the gumma extends towards and bursts on the skin surface. Hence general arthritis from the bursting of a gumma is extremely rare, though instances of its occurrence have been put on record. The patient was given iodide of potassium, with the result that the swellings rapidly disappeared.

REPORTS OF CASES.

A FAMILY OF BLEEDERS.

BY ERNEST A. SADLER, M.D., ASHBOURNE.

THE present head of the family is Mrs. Wibberley, widow, aged 60, living in Salt Alley, Ashbourne, Derbyshire. Her husband died about three years ago of senile decay. They were, as far as they know, quite unrelated before their marriage, 37 years ago, and lived the whole of the time in the house in Salt Alley, which has been inhabited by the Wibberley family for over 100 years. It is situated on the bank of the River Henmore, which runs through the town of Ashbourne, one side of the house rising perpendicularly from the bed of the stream. The house and the yard in which it is situated are frequently enveloped in river fogs, and subject to be submerged in times of flood. Until the time of her marriage Mrs. Wibberley (who, like her husband, comes of a family long established in the district) worked hard in farm service.

The peculiar diathesis appears to have arisen *de novo* in the present generation, for no evidence can be obtained of a hæmorrhagic tendency in any member of previous generations, except in the case of Mrs. W's father, who is said to have died, æt. 46, of "bleeding from the person"—a symptom probably indicative of local trouble and not at all dependent on a general diathesis. Mrs. W's mother died in child-bed, æt. 26, but not from hæmorrhage. She had had four children, none of whom were bleeders. *Her* father and mother lived to old age and had 16 children all healthy. Mrs. W's paternal grandparents were long lived and had 14 perfectly healthy children. Her husband's family has also a good history, and no hereditary disease of any kind can be traced in several generations.

Mrs. Wibberley herself has kept up the reputation of hæmophylics for fecundity. Her children number 16, but three died in the first few days of life of infantile complaints. The remaining 13 are, in order of seniority—

(1) Edward, (2) John, (3) William, (4) Hannah, (5) Fanny, (6) Harriett, (7) a second Edward, (8) Sarah Ann, (9) Albert, (10) Julie, (11) Charles, (12) Frank, (13) Harry.

Taking the boys first, Edward, the eldest, was the first member of the family to exhibit the peculiar diathesis. He had only one attack, but it proved fatal. At the age of 3, when apparently in perfect health, he fell and bit off the tip of the tongue. The bleeding could not be stopped, and death occurred on the fourth day.

John was always well. He has five children, the eldest 8 years old, and none of them have shown any hæmophylic tendency.

William, formerly a soldier, is married and settled in the town. He has two children, æt. 1 and 3 respectively; they are perfectly healthy.

The second Edward, now aged 21, has shown no tendency to bleed. An abscess that had to be incised gave no trouble.

Albert died at the age of three months, of "sunstroke."

Charles was the next member of the family who exhibited the signs of the diathesis. It was noticed at the time of his first attempts to walk that he bruised very easily. When nearly 7 the cutting of a tooth led to hæmorrhage, which proved fatal after a week's duration.

Frank, aged 12, has never bled nor bruised.

Harry, the youngest child, early developed the tendency to bruise. The liability is still abnormal, but is diminishing year by year. He has had several troublesome attacks of epistaxis, and two years ago fell down and bit the tongue, producing hæmorrhage which continued for more than a week. In this son the joint affection of hæmophylia first showed itself at the age of 3. He has had repeated attacks since, and they always begin suddenly in the night.

The well-known fact that the girls of a family do not themselves exhibit the hæmorrhagic tendency, but that they transmit it to their male children, is supported by the evidence obtained from the history of this family.

Hannah, the eldest daughter, has always been perfectly healthy. She has been married ten years, and has had five children.

1. Charles, the eldest, is 6 years old. The facility with which large bruises formed beneath his skin was noticed, as in the case of his uncles, at the time when he first began to crawl, and more markedly still when he was learning to walk. He has bled three times, twice from the frenum of the upper lip and gums, and once from a cut thumb; in each case the hæmorrhage continued till the child was reduced to the last stage of exhaustion. At the age of three it was first noticed that the ankle joint was full and swollen; many times since there has been similar swelling, and at the present time the left ankle is full and the skin over it discoloured.

2. Sarah neither bruised nor bled. She died, æt. 3½, of broncho-pneumonia.

3. George, æt. 2½, has shown exactly the same tendency to bruise and bleed as Charles, and from about the same age. A crushed finger nine months ago gave much trouble, and a prick of the tongue by a fish-bone nearly three weeks ago has reduced

him to an almost bloodless condition. The hæmorrhage only ceased a day or two ago, when the child was nearly *in extremis*, but already he is showing rapid improvement and gaining colour and strength hourly. He has not yet developed the joint affection of hæmophylia.

4 and 5 are twin boys, born four months ago. They have not yet reached the age at which the bruising and bleeding have usually first manifested themselves.

Fanny, the second daughter of Mrs. Wibberley, married seven years and living at Burton-on-Trent, has always had excellent health and good times with her children.

1. The eldest, John, looked strong and well, but was noticed to bruise from the time of first walking. At 18 months he bit his tongue and bled for a fortnight; at 2½, a cut finger bled for about the same time and was stopped by the application of Liq. Ferri Perchlor. fort. and pressure. At three he began with whooping-cough; in the third week epistaxis commenced, followed in a few days by bleeding from the ears and mouth, and death occurred on the fifth day of the hæmorrhage in Burton Infirmary. No hæmarthrosis.

2. A girl born prematurely died on the second day of life.

3. Walter, now aged 18 months, bruised first on the palms and palmar surface of the wrists at about the age of four months. This was noticed when he was put to sit at the table, and was due to hitting the hands on the table in front of him. Four months ago he fell and cut the frenum of the upper lip: bleeding was continuous for three weeks and the actual cautery used in Burton Infirmary only increased it. It was eventually stopped by the pressure of a pad and strapping across the lip. About three weeks ago one ankle swelled—it "came and went of itself." At the present time the child (who was brought for inspection) has bruises on the forehead and in the right ham, and in both buttocks are large hæmatomata due to repeated falls during attempts to walk.

Mrs. Wibberley's third daughter, Harriett, has been married four years, but as yet has no children. It is interesting to note however that Hannah's first child was not born till four years after marriage, and that in the following six years she had five; while Fanny did not bear her first child till she had been married over three years, and Mrs. Wibberley herself till 18 months after marriage.

The fourth and fifth daughters are unmarried, but Sarah, the fourth, is, in spite of the advice of her mother and sisters, to be married next month.

The cases, whose history has been sketched above, conform pretty closely to the typical course and symptomatology of Hæmophylia. The hæmorrhagic tendency has in each case, except the first, appeared at an age varying between four and six months in males, who have in every other respect appeared healthy: the earliest sign being extravasation into the subcutaneous tissues from slight and often unnoticed causes; bleeding being usually a slightly later symptom, and the joint affection later still, the period at which it begins being usually the fourth year, and its locality most often the ankle.

As the hæmophylic diathesis found in this particular family has apparently originated in the present generation, it was hoped that some further light might have been thrown on its etiology, but unfortunately none is forthcoming.

Treatment is not very satisfactory. Though I have had members of the family repeatedly under treatment for the symptoms peculiar to hæmophylia without as yet losing a case, I cannot claim for any particular line of treatment the credit for so fortunate a result, as in most of the attacks the bleeding has seemed to stop only when exhaustion has come on, and the child has been too feeble or comatose to do more than lie perfectly still. Locally, I now rely solely on continuous pressure where such can be applied, but where this is not practicable, as for hæmorrhage from the tongue and gums, the best results have seemed to follow perfect quiet in a darkened room, and the exhibition of large doses of liq. ferri perchloridi. After the hæmorrhage has once ceased there has appeared to be little risk of an immediate recurrence, and recovery has been rapid, even when the administration of iron has not been continued.

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

PATHOLOGICAL AND CLINICAL SECTION.

The sixth meeting of the Session was held in the Medical Institute, on Friday, April 29th, 1898, at 8 p.m., Dr. SIMON in the chair.

The following officers were declared elected for the ensuing year:—As Chairman, Jordan Lloyd, M.B., F.R.C.S.; as Hon. Secs., J. W. Russell, M.D., M.R.C.P., and J. H. Clayton, M.B.

Tuberculosis of the skin.—Dr. Short showed a case of tuberculosis of the skin in a man, æt. 26. The first sore appeared on the right hip seven years ago, and since that time forty-one places had appeared in various parts of the body. He had deposit of tubercle in the right upper lobe and slight chronic laryngitis. The unusual point about the case was the large number of lupus spots, which practically defied treatment.

ON MEDI
JUN 22 1899
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Two Cases of Acute Intussusception, treated by Abdominal Section.—Mr. George Heaton showed two children on whom he had recently performed laparotomy for the reduction of acute ileo-cæcal intussusception, with a successful issue in each case.

The first case was a boy, aged four years, who had a typical attack of intestinal obstruction due to intussusception on March 28th. The attack commenced suddenly with violent collapse and was followed by the passage of several stools of pure blood. A long sausage-shaped tumour could be felt in the right lumbar region. Abdominal section was at once performed and the intussusception, which was of the ileo-cæcal variety, reduced by manipulation. Uninterrupted recovery followed.

The second case was a boy, aged three, who was admitted into Hospital 24 hours after the first case. The onset in this case was sudden, but there was no passage of blood or mucus per anum; nor was the initial collapse so marked. Abdominal section was at once performed—about eight hours after the onset of symptoms—and an ileo-cæcal intussusception reduced. Rapid recovery followed.

In neither case was any attempt made to reduce the intussusception by external manipulation or inflation, but abdominal section was at once performed as being the surest method of *completely* reducing the intussusception.

Fatal Cases of Scarlet Fever occurring during the Puerperium. Dr. Millard read notes of the two following cases:—(1) Mrs. S, aged 26, a multipara, was confined on Feb. 11th, 1898. The labour was a protracted one, and forceps had to be applied. The child appeared healthy. The mother at first did well, but on Feb. 13th her temperature went up, and she had sore throat and vomiting. The following day a rash appeared, and the patient was sent into the City Hospital the same afternoon. On admission she was found to be suffering from a severe and undoubted attack of scarlet fever. The rash was bright and typical, present all over the trunk and limbs, the fauces were swollen and congested, and the tongue was coated but cleaning at the tip and edges. The temperature the same evening was 105, and the pulse 130 and of low tension. She passed a very bad night, and remained delirious till the end. There was troublesome diarrhœa. There was no pain or tenderness on palpating the abdomen, and the lochia were small in amount but not offensive. The temperature remained up, and the patient died on the fourth day. The case presented very much the features of an ordinary malignant case of scarlet fever. Shortly before death a swelling was observed in the right iliac region, but its nature was not made out, and, owing to the circumstances of the case, a *post-mortem* examination was not asked for. There had been a recent case of scarlet fever in the patient's house.

(2) The notes of the second case have been kindly supplied by Dr. Tatham, of Halesowen, in whose practice it occurred. Mrs. X., a multipara, was confined on Sept. 30th, 1897. The labour was normal. Two days later she had a rigor, and the

next day she had sore throat and a typical scarlet fever rash. There was no vomiting, and the tongue and throat were not typical. Dr. Tatham, however, had no doubt as to the case being one of scarlet fever, as there was a child in the same house who was supposed to have had measles three weeks before, but who was found to be desquamating, and to have double otorrhœa. The woman rapidly became worse, the temperature rose to 105, and she died the following day, the second day after the rigor, and the fifth day of the puerperium. There were no puerperal symptoms.

Diphtheria.—Mr. Leedham Green read a note on the Diagnosis of Diphtheria.

Hydatid of Lung with Pyo-pneumothorax.—Dr. Codd read a note on this case. Three weeks before admission the patient complained of pain in the left side, and the day before was said to have pleuritic effusion by a medical man. On admission, the cardiac apex beat was in the 2nd and 3rd spaces, half-an-inch to the right of the sternal margin. On the right side of the chest in front, dulness began at the 3rd rib and extended down to the liver dulness with puerile breathing. The left side, front and back, was hyperresonant, with absent breath sounds, vocal resonance and fremitus; bell sound and succussion splash were present. No abnormal dulness behind on sitting up, but when in the horizontal position there was a line of dulness below the mid-axillary line. On exploration pus was found. This was let out and was very offensive, and the contained air was at a high positive pressure. Thirteen days later a hydatid cyst was extruded from the wound, and henceforward the patient made a steady recovery. The apex beat returned to its normal position though it eventually was pulled over to half-an-inch outside the nipple line.

Mr. Thomas exhibited Skiagrams of a case of congenital deformity of the right forearm in a child aged one year and seven months. The complete absence of the radius was well shown, and also the entire suppression of any rudiment of a thumb. Mr. Thomas had attempted to devise some mechanical arrangement to obtain an artificial opposable thumb, but without success, on account of the shortness of the forearm and the irritation which any mechanical restraint caused. He was of opinion that such cases usually acquired considerable dexterity in using the imperfect member, and therefore mechanical assistance was hardly desirable.

Syphilitic Disease.—Dr. Foxwell showed a liver, kidney, spleen and lung from a case of probable syphilis; the patient admitting to gonorrhœa only. There was also a fairly long history of three to four pints of beer being drunk daily. He also had aortic valvular disease. The reasons for thinking the condition syphilitic were these. First, the liver capsule was much thickened throughout, over considerable areas averaging $\frac{1}{32}$ of an inch, and having the blue opaline smear characteristic of syphilitic scars: the organ weighed 4 lbs. 4 oz., and the surface, though irregular, was not hobnailed: the section was also fairly smooth and neither markedly fatty nor too red: under the microscope the cirrhosis was seen to be intercellular. Second, the peritoneum of the upper abdomen was in a condition similar to that of the liver capsule. Third, the spleen weighed 14½ ozs., an enlargement greater than that usually due to alcoholic cirrhosis; its capsule also resembled that of the liver, and on section its surface was seen to be finely granular, the microscope showing some increase of fibrous tissue. Fourth, the kidneys weighed 13½ ozs., were rather pale and their capsules slightly adherent: they were tough and their section looked cirrhotic, but all the details were strangely blurred as if smudged over with some semi-transparent material. Under the microscope they had a surprisingly normal appearance, the epithelium of most of the tubules looking quite healthy, but there was a slight general proliferation of round cells between the tubules, and in places this was considerable. Fifthly, the lungs were distinctly denser, tougher, and less aerated than usual with a few pleuritic adhesions on each side; microscopically an excess of fibrous tissue was observed around the bronchioles and arterioles, in some instances to more than twice the thickness of the normal wall. On the other hand the heart wall gave no evidence of morbid change, although the aortic valve had only two cusps and these were severely suffering from both old and recent endocarditis. It should be added that there was no evidence of rheumatism.

Nitrous Oxide combined with Oxygen.—Dr. McCardie showed Hewitt's apparatus for the administration of Nitrous Oxide and Oxygen for dental and ordinary surgical work, both in a portable form, and as used in the operating theatre of the London Hospital; and read a note on the use of Nitrous Oxide combined with Oxygen as an anæsthetic, which will be published in another form.

REVIEWS.

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YELLOW FEVER IN THE WEST INDIES.*

This book contains a very excellent account of the natural history of yellow fever as seen in the West Indies. The book is written from the clinical point of view, for, although a short reference is made to recent bacteriological researches and the controversies which have arisen from them, yet Dr. Anderson disclaims any personal knowledge of these matters and expresses no opinion as to their merits. With regard to the clinical features of the disorder, however, it is evident that the writer is dealing with a subject on which he is in every way competent to speak, and his wide experience enables him to give an excellent picture of the disease.

As to the accuracy of the description, and of the opinions expressed, we are unable to form any judgment. Allusion may be made, however, to one or two disputed points on which the author has expressed a pronounced opinion. The possibility of the occurrence of cases of yellow fever without any albuminuria Dr. Anderson would entirely deny, except in the rare instances in which the disease has been aborted by early treatment, a result which he believes to be possible in favourable cases. He admits that during an epidemic cases are sometimes met with in which the symptoms resemble those of the first stage of yellow fever, and in which there is no albuminuria. These, however, he regards as instances of malarial fever, on which some of the characteristics of the prevailing epidemic have "been impressed"—an opinion which, without possessing any special knowledge of the matter, we should be inclined to accept with some hesitation. In any case, Dr. Anderson has never seen a fatal case, or one in which black vomit has occurred, without pronounced albuminuria. The albumen first appears in from two to five days; in some cases it is very evanescent, lasting only a few days, and it rarely persists longer than a fortnight.

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* Yellow Fever in the West Indies. By Izett Anderson, M.D. Edin., formerly Resident Surgeon of the Colonial and Seamen's Hospital, Georgetown, British Guiana; Member of the Government Medical Council, &c. London: H. K. Lewis. 1898.

As already stated, Dr. Anderson believes that it is sometimes possible to "abort" the attack by early and vigorous treatment. This latter consists of the classical "20 and 24" prescription—or, in other words, 20 grains of calomel and 24 of quinine, repeated, if necessary, for three doses at intervals of a few hours. Mercury, however, should never be given so long as any trace of albumen is present in the urine. Cold packs are not infrequently necessary to reduce the temperature; good nursing and stimulation are of course essential. The writer lays especial stress on the great danger of misunderstanding the true nature of the period of relief and apparent improvement which occurs at the end of the first stage, and quotes cases in which painful and even disastrous results have followed from mistakes made on this point. Dr. Anderson is definite in his disbelief in the infectiousness or contagiousness of the disease.

A SYSTEM OF MEDICINE. BY MANY WRITERS.*

In the preface to this volume Dr. Allbutt announces that six volumes at least will be required to complete the book, instead of the five volumes originally projected. Many of the articles have already been considerably cut down by the Editor, and to such a degree that complaints have been made of the brevity of some of the chapters.

However the work is on the whole so comprehensive and thorough that no serious reader will begrudge purchasing an extra volume to complete a book of such undoubted value. It seems to have been the aim of each author throughout to treat his especial subject radically, and to give not only a description of the pathology and treatment of the various diseases, but also to lay before the reader a summary on the anatomy and physiology of the organs and tissues with which he deals. We feel inclined to agree with this way of treating the matter; for in reality it is a saving of time to have the whole of the aspects of a subject collected in one book, and to be relieved of the labour of referring to two or three different volumes for the information required.

The present volume includes treatises on diseases of the liver, pancreas, the ductless glands, kidneys, larynx and pharynx, scrofula, and an introduction to the general pathology of respiratory diseases. The chapters are all very good, very complete and entirely up to date. We think that the chapters on functions of the liver and on jaundice contain rather too much of historical references to opinions formerly held, which more recent investigations have rendered untenable; but that is a matter for the Editor rather than the Reviewer.

In Dr. Fitz's article on the Pancreas we note his insisting on the point that fat-necrosis occurs only in conjunction with pancreatic disease.

The Kidneys are treated both from medical and surgical points of view in several excellent articles. Dr. Arthur Ransome furnishes some most interesting diagrams of stethograms; and Dr. Rolleston has valuable papers on the Spleen and the Suprarenals.

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* A System of Medicine. By Many Writers. Edited by Dr. T. Clifford Allbutt, F.R.S., etc. Vol. iv. Macmillan and Co.

The great literary pains taken by some of the writers are exemplified by the appendix of references to the admirable chapter on Myxœdema. These references occupy six pages of print; and those on Graves' disease fill seven pages. We appreciate these quotations of authorities as being the greatest possible help to workers engaged on the subjects.

A TEXT-BOOK OF SPECIAL PATHOLOGICAL ANATOMY.*

THIS volume is the continuation of the second edition of Ziegler's important work (vol. i. having been reviewed by us last year, *Birm. Med. Rev.*, 1897), and deals with the morbid anatomy of the alimentary canal, the liver and pancreas, the respiratory system, the urinary and genital organs, the eye and the ear. Various forms of stomatitis are carefully described. We notice that under the head of thrush the oidium albicans is still described as the special parasite and although dentigerous cysts are described this term is not employed. We also notice that pharyngeal conditions are very briefly described and there is no mention of keratosis pharyngis. The subject of gastric ulcer is far too brief and practically no account is given of its pathology, merely a list of the conditions under which ulceration of the mucous membrane may occur; thus "venous engorgement, arterial anæmia due to thrombosis; embolism, spasmodic arterial contraction, arterio-sclerosis, or hyaline degeneration of the vesicle," are given as the most probable causes of a gastric ulcer. There is no doubt that gastric ulceration of the mucous membrane may arise under these circumstances, but these do not constitute the explanation of Gastric Ulcer. The various inflammatory conditions of the stomach and intestine are clearly described, but we cannot help observing that the section dealing with cirrhosis of the liver is far too elementary, in view of the large amount of recent work on this subject. It would have been desirable from the student's point of view to have given a somewhat more extensive description. Notwithstanding that a very complete list of references is given at the end of the section, we look for a somewhat judicial description of such diseases in a book of this nature, as it is impossible for the majority of readers to wade through the large amount of literature indicated. The subject of acute pancreatitis is dismissed with a very short notice. There are long chapters dealing with the lungs and kidneys, and one valuable feature about each of these portions of the work is that due place is given to the morbid anatomy of the various organs connected with the respiratory and urinary systems. The chapter on diseases of the breast is very clear and well illustrated. The extensive references which formed so marked a character of the first volume are given equally fully in this, a feature of great value in the work, but as we had occasion to remark before, we cannot approve of the system of translating references into English as it considerably increases the labour of referring to the originals. We consider that this volume fully equals the first as a handy manual for the student of pathology.

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* A Text-Book of Special Pathological Anatomy. By Ernst Ziegler. Sections ix-xv.

D. S.

THE POCKET FORMULARY FOR THE TREATMENT OF DISEASE IN CHILDREN.*

THE intention of this book is to furnish a guide for the writing of children's prescriptions. The two points to which attention has been especially paid are the regulation of the quantities ordered, and the concoction of mixtures which shall not be too unpleasant for the palates of these somewhat particular patients. For the latter object the means of hiding badly tasting medicines is suggested in most cases, and a few examples of suitable prescriptions are given for all the important drugs.

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* The Pocket Formulary for the Treatment of Disease in Children. By Ludwig Freyberger, M.D. Vienna, M.R.C.P. Lond., M.R.C.S. Eng.; Clinical Assistant, Hospital for Sick Children, Great Ormond Street; Curator of the Museum, Pathologist and Registrar, Great Northern Central Hospital. London: The Rebman Publishing Company, Limited. 1898.

The guide for dosage is as follows:—If the dose suitable for an adult twenty years of age be taken as the unit, then the average dose suitable for an infant under 1 year will be 1-18th to 1-12th.

That for a child	1 to 2	years old will be	1-12th to ⅛
„	2 „ 4	„	⅙
„	4 „ 7	„	¼
„	7 „ 10	„	½
„	10 „ 15	„	⅔ to ¾

Of course the precautions needed in prescribing particular drugs, such as opium, are given more fully in each individual case. A "Therapeutical Index" is added, in which the drugs most suitable for each disease are enumerated under the latter headings arranged alphabetically.

The book deals with a difficult branch of therapeutics, and should be found useful for reference.

A CLINICAL TEXT-BOOK OF SURGICAL DIAGNOSIS AND TREATMENT.*

THE author states in his preface that his chief aim in writing this book has been to enable the practitioner, in dealing with a surgical case, to answer the two questions, "What is the disease or injury?" and "What is the proper treatment?" Consequently he enters hardly at all into such subjects as pathology, morbid anatomy, and bacteriology. The work must have involved an enormous amount of labour and, on the whole, we must say has been well done. Not only are good clear accounts of clinical signs and symptoms given, but excellent directions are given on that all important part of surgical work—methods of examination. The sections on treatment are sound and sufficiently full, and they have this advantage, that the author does not describe half-a-dozen different methods of treatment and then leave the reader to choose between them, but gives his personal advice and experience, while at the same time he does not hesitate to give quotations from other books.

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* A Clinical Text-Book of Surgical Diagnosis and Treatment for Practitioners and Students of Surgery and Medicine. By J. W. Macdonald, M.D., Professor of the Practice of Surgery and of Clinical Surgery in Hamline University, Mineapolis, etc. Pages 798, with 328 illustrations. London: The Rebman Publishing Company Limited. 1898.

At intervals through the work Dr. Macdonald says a little about pathology and morbid anatomy, and here certainly exception must be taken to some of his statements; for instance, he certainly leads the reader to understand that atheroma and primary calcification of the arteries are one and the same thing. Again he speaks of the existence of scirrhus of the rectum, and describes how it is to be diagnosed from epithelioma of the same part, apparently ignoring the fact that it is extremely doubtful, to say the least, if scirrhus cancer is ever found in the intestine.

Despite one or two points of this kind, the author seems to us to have fulfilled his object, namely to write a thoroughly practical book, which, we should think, will be especially useful to the practitioner who is not constantly being brought into contact with surgical cases.

SURGICAL TECHNICS IN HOSPITAL PRACTICE.*

THIS is a small book of 130 pages, intended for use as a handbook for house surgeons and dressers. Its aim is not that of most surgical handbooks: namely the teaching of bandaging and minor surgery, but rather the laying down in plain language as to how the generally accepted principles of asepsis and surgical cleanliness are to be practically carried out. The opening chapter gives excellent advice on personal asepsis, a point far too often neglected by house surgeons, some of whom seem to have an innate tendency to wear their very oldest coat while doing their ward dressings, and to think that the more wool and dirt there is adherent to the coat the more hard work they are doing. Then follow chapters on the preparation of patients for operation, and on the arrangements in the operating theatre. We are glad to see stress laid on such a point as the importance of extracting decayed stumps before operations on the mouth.

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* Surgical Technics in Hospital Practice. By K. W. Monsarratt, M.B., F.R.C.S.E., Assistant Surgeon to the Liverpool Cancer Hospital. Bristol: John Wright and Co. 1898.

Particularly helpful to the recently appointed house surgeon will be found the section on the after treatment of operation cases, more especially as regards such questions as shock, excessive vomiting, etc. There is only one point in the book to which we feel inclined to take exception, and that is the direction given to render silk ligatures aseptic, namely, to boil them for ten minutes in soda solution. This solution rots silk, which ought to be boiled in plain water for an hour.

On the whole we have no hesitation in saying that this is a book which should be read and thought over by every house surgeon, dresser, and nurse

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY.*

DR. GOULD's Year-Book of Medicine and Surgery is one of the very best of these most useful publications. The records of the year's advances in the several departments of medical science are in most cases made by writers of recognised authority, and we note that the element of criticism, though given but a subordinate place, is not wanting. The scope of the work is such as to enable it to include whatever work of importance has been accomplished in the year; and in our opinion such a book is of but little value unless, like that which lies before us, it is of such magnitude as to be a complete, rather than a selective record of medical observation. In this case it would be a very hard matter, as far as we can ascertain, to point out much work of any pretence to value which has failed to receive due recognition. We are glad that the book has been, as it certainly ought to be, widely appreciated.

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* The American Year-Book of Medicine and Surgery, Under the general editoral charge of George M. Gould, M.D. London : The Rebman Publishing Company, Limited. Philadelphia : W. B. Saunders. 1898.

MEDICAL DIAGNOSIS.*

THIS work, which has now gone through four editions, is too well known to call for much comment, as it has justly established its reputation as a correct manual of physical examination. The student of medicine will find it very satisfactory in learning his case-taking. This edition is considerably improved by the incorporation of several very valuable illustrations, especially those referring to the distribution and course of the optic fibres. On the other hand, we think that the account of the examination of the gastric contents might have been somewhat fuller, as this subject has come into such general use of late that even the ordinary student of clinical medicine is expected to show some knowledge of it.

TRANSACTIONS OF THE DERMATOLOGICAL SOCIETY OF GREAT BRITAIN & IRELAND. VOL. III.

THIS volume contains several important contributions to dermatology, among which are a kind of oriental sore by Dr. Abraham, Yaws in India, by Mr. Arthur Powell, cutaneous myiasis, by Dr. Abraham, besides short notices of a large variety of skin diseases exhibited at the Society during the year. This volume, like its predecessors, is an important record of British dermatology.

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* Medical Diagnosis. By Graham Brown. Fourth Edition.

THE NEW PHARMACOPŒIA.

We have received annotations on the new British Pharmacopœia from Messrs T. and W. and W. Southall and Mr. Thomas Chase, both of which contain a useful and concise account of the changes which have been introduced. Especially valuable also is the Synopsis which has been compiled by Mr. H. Whippell Gadd and published by Messrs Baillière, Tindall and Cox, and which, in addition to an account of the alterations, contains also a tabular statement of the composition and the imperial and metric dosage of every drug and compound in the Pharmacopœia. This little book is the more useful in that it can be easily carried in the waistcoat pocket.

New Books, etc., Received.

A Synopsis of the British Pharmacopœia 1898. Compiled by H. WHIPPELL GADD. London: Baillière, Tindall and Cox. 1898.

Nouvelle Opération Ostéoplastique dans la Région Tibio-Tarsienne. Par le Prof. Dr. Z. SAMFIRESCU, Directeur du Laboratoire de chirurgie opératoire et d'anatomie topographique de la Faculté de Médecine de Jassy.

Nouvelle Opération Ostéoplastique dans la Région Tibio-Tarsienne (modification de l'opération Pasquier—Le-Fort). Par le Prof. Dr. Z. SAMFIRESCU et le Dr. H. SOLOMOVICI.

Rheumatoid Arthritis, its Pathology, Morbid Anatomy, and Treatment. By GILBERT A. BANNATYNE. M.D. Glas., M.R.C.P. Ed., Hon. Physician to the Royal United Hospital, and to the Royal Mineral Water Hospital, Bath. Second Edition. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent and Co. Ltd. 1898.

B. Bradshaw's Dictionary of Bathing Places, Climatic Health Resorts, Mineral Waters, Sea Baths, and Hydropathic Establishments. London: Kegan Paul Trench, Trübner and Co. Ltd.

A System of Medicine. By Many Writers. Edited by THOMAS CLIFFORD ALLBUTT, M.A., M.D., LL.D., F.R.C.P., F.R.S., F.L.S., F.S.A., Regius Professor of Physic in the University of Cambridge, Fellow of Gonville and Caius College. Vol. v. London: Macmillan and Co. Ltd. 1898.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Fifteenth Annual Issue. London: Charles Griffin and Company Limited. 1898.

Text-Book of Diseases of the Kidney and Genito-urinary Organs. By Professor Dr. PAUL FURBRINGER, Director of the Friedrichshain Hospital. Berlin, etc. Translated from the German with Annotations, by W. H. GILBERT, M.D., Physician in Baden-Baden, etc. Vol ii. London: H. K. Lewis. 1898.

Medical and Surgical Report of the Presbyterian Hospital in the City of New York. Vol. iii., January 1898. Edited by ANDREW J. MCCOSH, M.D., and WALTER B. JAMES, M.D. New York: Trow Directory Printing and Bookbinding Company.

An American Text-Book of Genito-urinary Diseases, Syphilis, and Diseases of the Skin. Edited by L. BOLTON BANGS, M.D., Consulting Surgeon to St. Luke's Hospital and the City Hospital, New York, and to the Methodist Episcopal Hospital, Brooklyn, etc.; and W. A. HARDAWAY, A.M., M.D., Professor of Diseases of the Skin and Syphilis in the Missouri Medical College, St. Louis, etc. London: The Rebman Publishing Company Ltd. Philadelphia: W. B. Saunders. 1898.

Burdett's Hospitals and Charities, 1898. By SIR HENRY BURDETT, K.C.B. London: The Scientific Press Ltd

Neurotic Eczema. By L. DUNCAN BULKLEY, A.M., M.D., Physician to the New York Skin and Cancer Hospital, Dermatologist to the Randall's Island Hospital, Consulting Physician to the New York Hospital, etc.

Baby Feeding, or How to Rear Healthy Children. Advice to Mothers on the Rearing and Management of Children. By A Doctor. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent, and Co. Ltd. 1898.

Zur Behandlung des Pyothorax. Von Prof. Dr. CARL BECK. New York.

Notes on Malaria in Connection with Meteorological Conditions at Sierra Leone. By Surgeon-Major E. M. WILSON, C.M.G. Lately Senior Medical Officer at Sierra Leone. Second Edition. London: H. K. Lewis.

The Edinburgh Medical Journal. Edited by G. A. GIBSON, M.D, F.R.C.P. Ed. New Series, Vol. iii. Edinburgh and London: Young J. Pentland. 1898.

The Extra Pharmacopœia. Revised in Accordance with the British Pharmacopœia, 1898. By WILLIAM MARTINDALE, F.L.S., F.C.S., Member of Council of the Pharmaceutical Society, and late Examiner. Serotherapy, Organotherapy, Medical References, and a Therapeutic Index, by W. WYNN WESTCOTT, M.B. Lond., H.M's. Coroner for North-east London. Ninth Edition. London: H. K. Lewis. 1898.

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THE
BIRMINGHAM MEDICAL REVIEW.
AUGUST, 1898.

ORIGINAL COMMUNICATIONS.

INGLEBY LECTURES FOR 1898.

EXTRA-UTERINE PREGNANCY.

BY JOHN W TAYLOR, F R.C.S. ENG.

LECTURE II.

I. TUBO-ABDOMINAL PREGNANCY (SYN., ABDOMINAL OR VENTRAL PREGNANCY).

(Continued from page 28.)

The lower pole of the pregnancy does not always take the form described in the case I have just reported and depicted in the illustration. In a case on which I operated at term, both mother and child surviving, the amniotic sac stopped short at the placental insertion as in normal intra-uterine pregnancy, and the raw under-surface of the placenta had extended or grown beyond its tubal site and was attached to the posterior surface of the uterus, the sigmoid flexure and the pelvic wall as well as to the tube. But though I failed to fully understand it at the time I am now quite satisfied that the pathological relations of the fœtus were exactly similar to those I have described as present in the preceding case. The ragged margin of the amnion in this case may still be seen attached to the placenta, and the rest of the sac was probably continued as a transparent covering or sheath over the small intestines and the under surface of the great omentum around the space from which I removed the child. The conditions met with in this case are diagrammatically represented in Fig. 20. The salient features which separate it from the preceding case will be recognised at once on comparing the accompanying diagrams.

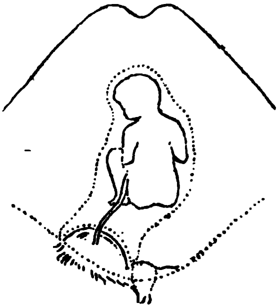

Fig. 20.

There are two other conditions under which the placenta may be found in advanced abdominal pregnancy. In the first the tube, although excessively expanded, may retain its individuality and the placenta be found still lying within it. In one case of this kind, the case of Dr. Halliday Croom, minutely examined and described by Clarence Webster, he states, "A large, well-formed, recently dead fœtus was removed from a sac which extended nearly up to the liver and which had in the lower part of the abdomen a thick anterior wall. There was an excessive amount of amniotic fluid. The uterus was enlarged, elevated, and drawn towards the right side. The placenta was in a separate sac to the left side of the pelvis—a thick discoid mass extending two inches above the brim. The gestation-sac was double, one containing the fœtus, the other the placenta. The former was that part of the peritoneal cavity behind the stomach, transverse colon, and great omentum; the latter consisted of the enormously dilated Fallopian tube lying in front of the uterus and extending vertically from the utero-vesical pouch to the fourth lumbar vertebra. Though quite distinct from one another they were connected by means of the umbilical cord and amnion; this membrane lined the secondary (peritoneal) sac and passed into the substance of the primary (tubal) sac."

Another case very similar to this was reported by Mr. Tait to the Obstetrical Society in 1892 under the title of "A Case of Ectopic Pregnancy in which the Fœtus seems to have been Developed to the Full Time in the Peritoneal Cavity, still retaining its Amniotic Covering." In the report of this case we read: "The child was lying loose in the abdominal cavity except that all its upper surface had become adherent to the omentum and to the anterior parietal peritoneum. The child was still enclosed in its membranes, but the liquor amnii had entirely disappeared. The umbilical cord went straight down to a round, smooth, globular mass about the size of a cocoanut, which occupied the pelvic cavity and was adherent to the surrounding tissues. The question of the removal of the placenta, which this substance really was, occupied my mind for a few seconds. On making tentative efforts to separate the globular mass I found that it peeled out with considerable ease, much as a broad ligament cyst would, and after it was separated down to a pedicle which was the cornu of the uterus, it became perfectly evident that the globular mass was the right Fallopian tube." Following the graphic method previously employed to illustrate the relations of the placenta this form may be diagrammatically represented as in the accompanying illustration (Fig. 21).

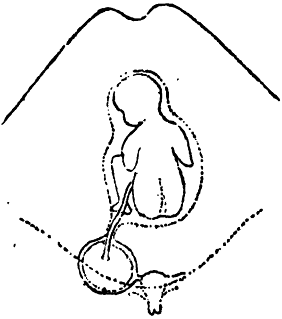

Fig. 21.

Finally, there is one specimen which shows that the abdominal position of the fœtus may be associated with an intra-ligamentary placenta. For a long time I failed to find any certain evidence that advanced abdominal pregnancy was ever the outcome or sequel of secondary rupture from the broad ligament into the abdomen. But in examining the various specimens to be met with in London I came across a most valuable one in the St. Thomas's Hospital Museum (No. 2491) which shows that this is a possible, though, I believe, a very rare, occurrence. The accompanying illustration (Fig. 22) is a drawing of my own made directly from the specimen itself. There

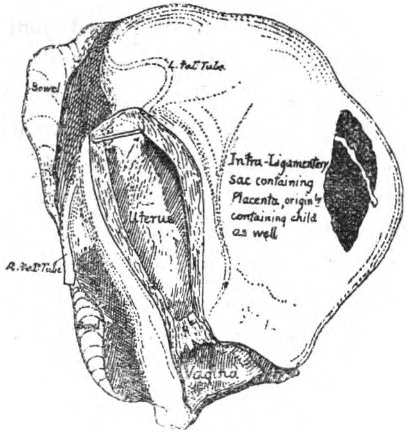
Bowel
L. Fal. Tube
Intra-Ligamentory sac containing Placenta, origin'ly containing child as well
Uterus
R. Fal. Tube
Vagina

Fig. 22.

is a large sac formed by the left broad ligament on one side of the uterus—the uterus, indeed, forms a kind of appendage to its wall—the left Fallopian tube courses over its summit and directly underneath this lies the attachment of the placenta. On the outer side of the sac is a rather large lacerated opening through which the fœtus passed into the abdominal cavity. The specimen is said to be taken from a woman who died at the full period of gestation. Although the sac is a large one it is scarcely of sufficient size to have contained a full-time fœtus, and therefore it is at all events highly probable that in the later months of pregnancy the fœtus surrounded by its amnion was strictly abdominal in position as in the other cases I have been describing. If so, we have a fourth position of the placenta in abdominal pregnancy. Strictly speaking this is "tubo-ligamentary-abdominal," and perhaps should be more correctly described under the next division of my subject, but it is more convenient to take its consideration here. Incidentally, it is worthy of notice what a very marked and unmistakeable ligamentary sac is to be found when the fœtus has really become abdominal, after passing through an intra-ligamentary stage in its development.

The accompanying illustration (Fig. 23), the last of the present series, will bring the preceding case in line with the others I have mentioned.

There are accordingly four different relations of the placenta to the main gestation-sac in abdominal pregnancy which need some differentiation. In the first group of cases the placenta is practically within the main gestation-sac and covered by reflexions of the amnion. In the second it has a fœtal and maternal surface of nearly equal dimensions as in normal pregnancy, the fœtal surface being covered by the amnion and in immediate relation to the sac, while the maternal surface is growing from the spread-out remnants of the tube and from the peri-tubal tissues also, the back of the uterus, the broad ligament and the pelvic wall being favourite sites for such extensions of attachment. In the third, the placenta remains within the tube, the tube is still recognisable and the maternal attachments are confined to the tube itself. In this case there may be a double

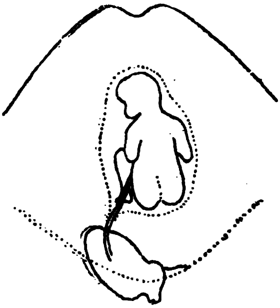

Fig. 23.

gestation-sac, the one containing the fœtus, the other the placenta. In the fourth the placenta is attached to the upper wall of a broad ligament-sac outside the peritoneum, and the cord passes to the child through a hole in the ligament

Before I leave this portion of my subject I want to finally enforce the point that these illustrations showing the different positions of the placenta in tubo-abdominal pregnancy are no mere imaginative figures showing simply possible relations ot the pregnancy to surrounding structures. They are records of facts carefully observed, and are each and all supported by extant specimens still available more or less for individual inspection and verification.

The sac in abdominal pregnancy evidently varies greatly in appearance and consistency. In many of the recorded cases it can hardly have consisted of anything more than the amniotic membrane. This has become attached to the peritoneum, "its epithelial lining becoming destroyed and its sub-epithelial layer (in some places) becoming dense and fibrous" (Webster). In other situations the sub-epithelial layer has been unaffected and the membrane is directly attached to the intestine or the abdominal viscera, is indistinguishable by sight from the proper peritoneal surface of such viscera, and only visible when reflected from one viscus to another as already described. The membranes are not, however, necessarily adherent in this way; sometimes they have a completely independent existence and probably all degrees are possible of partial peritoneal attachment. Sometimes their consistency and independence are such that they have been described as being extirpated (Tait) or sutured (Rosenmauer) at the operation for removal of the pregnancy. Cases so described are, however, sometimes open to the suspicion that an unrecognised broad ligament pregnancy has been mistaken for abdominal. In true tubo-abdominal pregnancy the sac, consisting at the best of amnion and chorion, and often perhaps of an amniotic layer only, must, if independent, always be extremely thin and easily broken. If completely independent it may admit of removal with the child, but it is extremely doubtful if it could ever possess sufficient independence and consistency to admit of any independent suture. The relations of the placenta to the sac are of chief importance and will need some reconsideration under the heading of Treatment.

The extra-uterine placenta at term is an object of considerable interest. Throughout the whole course of the pregnancy the placenta has marked the site of the original and main attachment of the pregnancy, and in its attachment has held, and still holds throughout, the key to much of its pathology and treatment. When the infant has arrived at term the placenta has also reached its fullest development, and, so far as my experience goes, the extra-uterine placenta at term, though often deformed in shape, keeps close to the normal standard both in size and weight. The method by which it has attained this development outside of the uterus may well demand our attention. Mr. Sutton states: "The fully developed uterine placenta is composed of parts derived from the maternal and fœtal tissues in nearly equal parts; a tubal placenta is mainly if not entirely derived from the fœtal tissues." It is true that there is no clear evidence of a tubal decidua, but the placenta as it increases in size (like a new growth in its progress) absorbs, takes up, and metamorphoses into its own tissue that of the Fallopian tube in which it was originally enclosed, and possibly the ovary of the same side also. In a considerable number of cases it is reported that neither ovary nor tube could be identified on the side of the pregnancy. So completely is this done that all traces of the tube may be lost at term or only the fimbriated end be found, as in the case I have described. When by the reflexion of the amnion this invasion of the placenta is limited to the tube and broad ligament only the matter is solely one of pathological importance; when there is no such limitation the consequences may be serious.

It will doubtless be noticed that what I have said regarding the pathology and operative history of tubo-abdominal pregnancy appears to explain and confirm in some degree the observations of many of the older writers, and I am pleased to be able in any way to re-established their credit and re-affirm in the main the correctness of their records. It is true that they considered that the peritoneum itself might discharge the functions of the fœtal membranes (Parry, p. 135) and that the impregnated ovum might from the outset implant itself on the peritoneum and in both of these guesses after truth they were mistaken. It is true also that in the abdominal or "ventral" pregnancy they thought they saw the child floating freely among the intestines within the peritoneal cavity, and did not dream of the almost invisible sheath of the adhering amnion which formed a sac to the pregnancy, but in their observation of the fact that there was an extra-uterine pregnancy in which the child was abdominal or ventral in position, and in their opinion that this form of pregnancy deserved to be considered as a distinct and special variety of exta-uterine gestation they were perfectly justified and modern research tends only to confirm their view.*

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* *Note on Utero-abdominal Pregnancy.*—"Abdominal" pregnancy may be the consequence of invasion from the uterus as well as from the tube. An intra-uterine (normal) pregnancy, after rupture of the uterus, may extrude itself through the uterine rupture, and the fœtus, enclosed in its amnion become "abdominal" or "ventral" exactly as in tubo-abdominal pregnancy. In this case the placenta remains within the uterus, so that if this form of pregnancy be included in our consideration there is still yet another (fifth) position of the placenta that may be encountered in advanced abdominal gestation. Dr. Parry refers to three cases of this class—the case of Patuna (Helen Zopp), the case of Hey (1769), and that of Hofmeister (1829).

The best recorded case is a recent one of Prof. Leopold's, and is published in the *Archiv fur Geb. und Gyn.*, B. lii., p. 376. The following abstract is taken from the Epitome of Current Medical Literature in the *British Medical Journal* for June 5th, 1897:—

"ABDOMINAL GESTATION COMPLETED TO TERM AFTER RUPTURE OF THE UTERUS.

Leopold (*Arch. f. Geb. u. Gyn.*, lii., p. 376) relates that a woman aged 42, ruptured her uterus in her twelfth pregnancy two or three weeks before quickening by falling down some cellar stairs and alighting heavily on her sacrum and nates. She had no hæmorrhage or abdominal inflammation, and soon recovered; but from the time the child's movements began they caused such severe abdominal pain as to keep her almost completely bedridden. About three weeks before the end of her term the movements ceased, she suffered from feelings of coldness and heat, headache, and great discomfort;

2. TUBO-LIGAMENTARY PREGNANCY (SYN., BROAD LIGAMENT PREGNANCY.)

A growing pregnancy situated in the middle of the Fallopian tube as it expands the tube, instead of thinning and bursting the upper part of the tube, may separate the layers of the mesosalpinx. The space between these layers, which in the normal state is non-existent or represented by the merest line, becomes under these conditions a space of considerable extent. An increasing amount of the circumference of the tube is accordingly separated from its peritoneal covering and exposed to loose connective tissue only. As the tube expands still further it is only reasonable that it should occasionally give way

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there was no discharge of blood or decidua. On admission the case was diagnosed as a left-sided extra-uterine pregnancy, with a mature fœtus dead about three weeks. On laparotomy the child was found in a delicate sac, and when it was extracted by the head, the pelvis and feet, which lay near the pancreas, were followed by a coil of small intestine, with which they must have been in direct contact. The cord passed into the uterus through a perpendicular slit, about 2 cm. long, behind the right broad ligament. The uterus was removed with the placenta, the stump secured in the abdominal wound, and gauze drains placed in the fœtal cavity and pelvis. She left the hospital on the forty-fourth day in excellent condition. Leopold gives microscopical and macroscopical details (two plates), and concludes that the uterine tissue had suffered from the numerous pregnancies and labours, in the last three of which the placenta had had to be removed by hand; that the rupture was caused by the posterior surface coming into violent contact with the promontory of the sacrum, and could not have occurred before the seventeenth week, as the reflexa was everywhere in contact with the uterine wall; that as the placenta remained *in situ* there could have been no sudden escape of the waters, the membranes could not have given way at first, but must have protruded through the gap in the uterus, and been followed by the child's feet and a great portion of the cord; and that the extrusion of the child must have been gradual. The child, a boy 50 cm. in length, and weighing 2,720 g., was covered with vernix caseosa, and somewhat macerated; the total length of the cord (49 cm.) corresponded to maturity. The posterior wall of the uterus, very much thinned, showed a cicatrix 6 cm. across and 2 mm. thick, in the centre of which was the opening. A sound passed freely into the uterus all round the cord except at the lower side, where there were some fine adhesions; there was a supplementary placenta."

The diagram used to illustrate the intra-ligamentary position of the placenta ("tubo-ligamentary-abdominal") may also be taken as representing a utero-abdominal pregnancy, the uterus being enlarged and retaining its placenta.

in this direction and that the fœtus should be extruded into the connective tissue space below the peritoneum. This is, indeed, exactly what happens in "broad ligament pregnancy." The rupture of the tube and extrusion of the pregnancy into the broad ligament is usually accompanied by considerable hæmorrhage, which still further distends the space beneath the peritoneum and between its layers. An extra-peritoneal hæmatocele or broad ligament hæmatoma is the result, and in some cases the pressure and disturbance caused by this is sufficient to stop the progress of the misplaced pregnancy. When this is the case the hæmorrhage is slowly absorbed and if the pregnancy be early and abortive it undergoes absorption also.

Broad ligament hæmatoma is of rather frequent occurrence as a sequel to any operation involving ligature of the broad ligament, and the hæmatoma is apt to occur at the first menstrual period subsequently to the operation. Every surgeon who practises operative gynæcology must accordingly be well acquainted with its leading features. It arises suddenly as a tumour or infiltration on one side of the uterus, it roofs the lateral vaginal fornix with a boggy or hard immoveable cement of blood-clot, and gradually extends upwards towards the groin of the affected side at Poupart's ligament. Sometimes its prolongations below are ill-defined and difficult to trace, at other times the tumour is defined and its border is abrupt. When the hæmorrhage is extensive and on the left side it may encircle and block the rectum, as Mr. Tait has shown. At other times, by burrowing in front of the rectum low down in the pouch of Douglas (as shown in the accompanying illustration taken from the work of Dr. Hart and Mr. Carter), it may produce a well-defined tumour behind the uterus that closely simulate the intra-peritoneal swelling of a distended and adherent tube. (Fig. 24). It always causes considerable pain (pain preventing sleep) and is frequently accompanied by transient fever. Broad ligament hæmatoma is often confounded with cellulitis and the differential diagnosis is sometimes very difficult. The bare physical signs in both conditions may be identical. Besides being a rather frequent operation sequel, hæmatoma of the broad ligament is occasionally met with after labour and abortion, and in connection with menstrual irregularity and arrest when no pregnancy exists. Other cases are due to the intra-ligamentary rupture of a tubal pregnancy, as already explained, but these are by no means so frequent as some writers would lead us to suppose. In this respect extra-peritoneal hæmatocele (broad ligament hæmatoma) may be said to contrast with intra-peritoneal hæmatocele. Intra-peritoneal hæmatocele in women is almost always due to tubal pregnancy; hæmatoma of the broad ligament, on the other hand, is only in the minority of cases due to this condition. When the pregnant tube ruptures into the broad ligament the hæmorrhage may be limited or small in amount and the placental attachment may be undisturbed. If so, the tube retains its relation and attachment to the placenta while the fœtus (instead of escaping upwards as in abdominal pregnancy) escapes downwards between the layers of the broad ligament and undergoes its further development beneath the peritoneum.

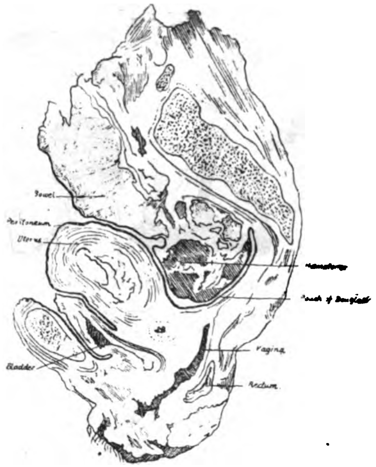

Fig. 24.

Let us take an actual example of this accident and study it more closely. There is a remarkable specimen in Mason

College Museum given by Mr. Hancox which beautifully shows the condition of a broad ligament pregnancy of four months' growth, and is well adapted for our purpose. On the right side of the uterus in the illustration (Fig. 25) the fimbriated end of the Fallopian tube is plainly seen resting upon the roof of a large excavated chamber formed by the upraised layers of the distended broad ligament. If we trace the tube from the fimbriated end towards the uterus we find that it is soon lost in the expanded roof of the broad ligament chamber. The tube as a tube exists no longer. Its middle third is ruptured and spread out and forms the immediate vault of the pregnancy beneath the peritoneum. It is only with dfficulty that we can rediscover some trace of its independent existence on the further side of the broad ligament tumour before it enters the uterus. The fœtus has escaped from its cavernous bed by secondary rupture and is now lying outside the broad ligament. It is still, however, connected by the cord, and if we could trace this upward to its termination we should find the placenta attached to the roof and lateral wall of the cavity in the broad ligament, and plainly situated above the original position of the fœtus which has escaped from it. Note that the placenta is uppermost. The course of events has been as follows: the impregnated ovum was arrested in the tube; where it was arrested it adhered and

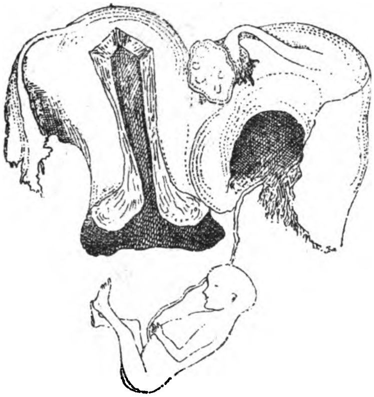

Fig. 25.

vital attachment took place. At the point of attachment the placenta was formed and no subsequent growth of the pregnancy has separated this attachment. The tube, instead of rupturing upwards into the abdomen, has ruptured downwards into the broad ligament. Into this space the fœtus has been driven and over the buried fœtus the placenta is fixed and blocks any upward progress. What is the inevitable consequence? If the pregnancy continues to develop either secondary rupture must occur or the peritoneum be continually displaced to make room for the growing fœtus. In this instance the case has ended by secondary rupture and the patient has evidently died from hæmorrhage or we should not have such a specimen before us.

Let us now turn to Dr. Berry Hart's and Mr. Carter's sagittal section of a broad ligament pregnancy at nearly the same period of growth. (Fig. 26.) Here we may see an exactly similar

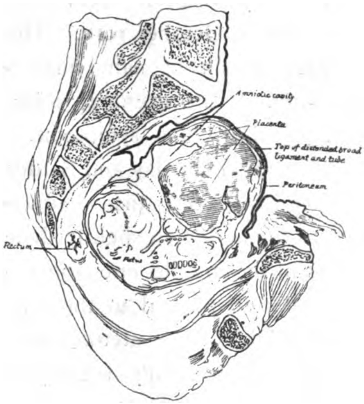

Fig. 26.

condition beautifully portrayed in section. Mark at the highest point the "top of the distended broad ligament and tube"; below this, intimately attached and inseparable from the tube, the mass of the placenta, and again below this, crowded and buried in the lowest part of the pelvis, the unfortunate fœtus. Illustrations intended to show in section the peritoneal reflexions are sometimes confusing and difficult to understand, but this is exceedingly simple and intelligible. The pelvic peritoneum is lifted by the growth of the pregnancy until it is no longer pelvic, or only slightly so. Its reflexions before and behind are shallow depressions only, and the arch of it runs across from the promontory of the sacrum to the pubes. In this instance, too, the case ended by secondary rupture and the patient died from hæmorrhage, though an attempt was made to save her by exploratory incision. Some of the clinical and operative features of a case at this stage may be gathered from the following example :—

Mrs. G., aged 31 years, had been married for three years. She miscarried in April, 1891, and in February, 1892 (at twelve weeks). She menstruated regularly from this date until July, 1892, the last normal period being at the end of this month. Amenorrhœa followed, continued for nearly eight weeks, and was again succeeded by irregular vaginal loss for some two weeks before I saw her on October 10th. The patient gave the history of a sudden attack of pain three weeks before on returning from church in the evening, violent abdominal pain and vomiting being the chief symptoms. This pain was repeated on the following Thursday and Saturday, and to a less extent twice during the week that had just passed. On examination I found the abdomen slightly distended and a hard tumour to the right of the middle line above the pubes. The uterus was of normal size, pushed to the left and fixed there. A pelvic mass to the right of the uterus was felt to be one with the supra-pubic swelling and only slightly movable together with the uterus. The pouch of Douglas was moderately distended with fluid. The patient was feeble; the temperature on the evening of the 9th had been 100° F., and the pulse had been 120. The diagnosis was made of intra-peritoneal hæmatocele and free blood in the pouch of Douglas due to the rupture of an extra-uterine pregnancy. Operation was performed on the morning of October 11th, 1892. There were present Dr. Leslie Phillips (who assisted me), Dr. Edge, Dr. De la Chérois, Dr. Williams, and Dr. Addenbrooke. Free fluid blood welled out on opening the abdomen. A ruptured pregnancy was found in the right broad ligament filling up the right side of the pelvis. The hæmorrhage from this (into the abdomen) had been partly confined by adherent, inflamed, and greatly thickened intestine. On separating this the outer coat of the bowel was at one part slightly torn, and this was sutured with a continuous Lembert suture. A large mole of pregnancy was removed from the right side of the pelvis and the blood and blood-clot thoroughly washed out with warm water. No pedicle offered itself for ligation, as the pregnancy had been subperitoneal. The pelvis was drained. At the close of the operation, although very little blood was coming through the drainage tube, the patient's condition was very serious. The pulse was 156. Nutrient enemata were ordered to be given every four hours. In the evening the pulse was still 156. On the morning of the 12th the pulse was 148; at 6 p.m. it was again 156. On the morning of the 13th the pulse was 144. At 4 p.m. on this day the bowels were moved, and the pulse fell to 129 at night. From this date recovery, although slow, was uninterrupted.

In abdominal disease a persistently high pulse-rate is more than anything else the gauge of the severity of the patient's condition. It is worthy of notice that the severity of this case was as marked as it could possibly be compatible with final recovery. These cases of broad ligament pregnancy with secondary rupture are always serious. Before operation they cannot be differentiated from the cases of later rupture of the tube already considered, but at operation in the more common tubo-abdominal rupture the hæmorrhage can be at once arrested by ligature of the broad ligament and removal of the tube. In the broad ligament pregnancy with secondary rupture the case is different—there is nothing definite to tie unless one ligates special vessels, the operation takes longer, the surgeon has to trust to pressure and drainage, and the final result is correspondingly less satisfactory and certain.

The tubo-ligamentary or broad ligament pregnancy may go on to term, and in its full development and during the stages by which it reaches that development it differs very materially from the tubo-abdominal or ventral pregnancy and will need further consideration from almost every standpoint. In tubo-abdominal pregnancy, if the patient survive the fourth month and the dangers incidental to the extrusion of the fœtus from the tube, she is free from further dangerous complications until the term of pregnancy is near its completion. In the tubo-ligamentary, on the other hand, owing to the higher position of the placenta and its liability to detachment from the growth of the pregnancy, the patient is never free from danger, and although many cases of this kind go on to term secondary rupture and fatal hæmorrhage are by no means uncommon or impossible at almost any stage of the development. In both varieties the period of the third or fourth month is a specially dangerous one, because up to this time the pregnancy has received the support and shelter of the pelvis. When the pregnancy rises out of the pelvis into the abdomen the protection afforded by this is lost, and in the broad ligament form the gradual elevation of the placenta brings an additional source of danger.

If we look at the specimens and illustrations already taken as typical of tubo-ligamentary pregnancy in its earlier stages, it appears as if the peritoneum had been equally separated in all directions by the growing pregnancy, and certainly in Dr. Hart's and Mr. Carter's case of mid-term pregnancy the perfect arch of peritoneum (seen in section) with a sulcus of equal depth behind and in front marks the case as one in which the pregnancy has been up to this point peculiarly symmetrical in its growth and in its displacement of the peritoneum. But it is not always so. Earlier or later in the history of most tubo-ligamentary pregnancies the tumour tends to invade or displace the layers of the broad ligament and the peritoneum continuous with these unequally. Sometimes it is the anterior fold of peritoneum which suffers the more displacement, and owing to the work of Dr Berry Hart and Mr. Carter these are the cases which are at present more recognised and better understood.

The peritoneum is raised from the back, side, and front of the uterus, it is entirely lifted away from the bladder, it is raised from the anterior and lateral abdominal wall, and in this way a good portion of the pregnancy comes to lie in front of the peritoneum. The pregnancy becomes in some places "sub-peritoneal," according to common anatomical language, and may possibly be opened from the outside of the abdomen without the necessity of incising the peritoneum anywhere. The pregnancy is at first "sub-peritoneo-pelvic," and afterwards (if it continues to grow) "sub-peritoneo-abdominal."

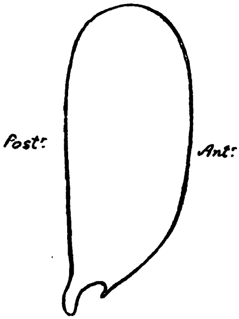

Fig. 27.

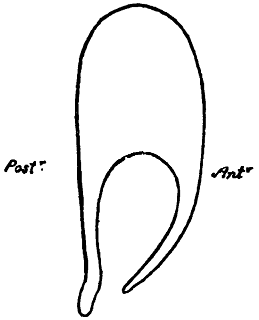

Fig. 28.

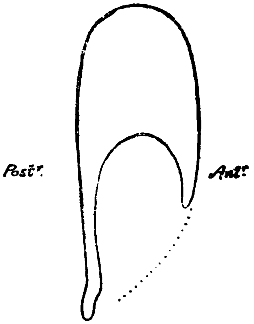

Fig. 29.

It cannot be adequately represented by any mere diagrammatic figure, as the tracing of the actual displacement of peritoneum is intricate and must obviously show considerable variations in individual cases. If, however, we take a sagittal section of the normal abdominal peritoneum to be roughly represented by the accompanying illustration (Fig. 27), and if we take the changes produced by a normal (uterine) pregnancy to be represented by Fig. 28, the main or essential change produced in it by the growth of this form of tubo-ligamentary pregnancy may be approximately depicted by the following alteration (Fig. 29). Now if this diagram be compared with the actual condition found in a case of advanced sub-peritoneo-abdominal gestation, as represented in the frozen section illustration, which by the kindness of Dr. Hart I am permitted to reproduce (Fig. 30), it will at once be evident that

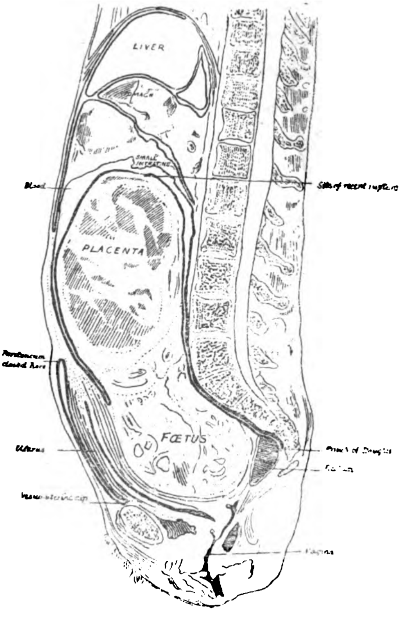

Fig. 30.

in both the posterior layer of peritoneum is unchanged and that it can be traced uninterruptedly right down to the bottom of the pouch of Douglas. It is altogether anterior to this where the displacement of peritoneum has occurred, and although in the frozen section plate this displacement is seen to be complicated by the retention or "survival" of the vesico-uterine fold (apparently cut off from the rest of the peritoneum), yet the general trend of the displacement or lifting is exactly as shown in the illustration. The anterior part of the pregnancy is that more uncovered by peritoneum and might possibly be reached by the surgeon without its section. It is, of course, this form of pregnancy which since it was first fully described has been very generally accepted as accounting for all cases of advanced extra-uterine pregnancy. It is only right to mention that Dr. Berry Hart himself is in no way responsible for this, and that nothing he has written so far as I know affords any foundation for this teaching.

As we have already seen, tubo-abdominal or ventral pregnancy has quite another explanation and is practically distinct from the tubo-ligamentary variety from the moment that the fœtus is extruded from the tube. Now, a considerable body of evidence has formed which tends to show that this sub-peritoneo-abdominal pregnancy which I have been describing is not only quite distinct from ventral pregnancy, but represents only a part, and that perhaps the smaller part, of the cases of true broad ligament pregnancy. For sometimes—and probably in the majority of cases—it is the posterior fold of peritoneum (and not the anterior) which undergoes the greater displacement, and then the condition found in advanced gestation is altogether different. The peritoneum is raised from the side and back of the uterus. It is raised from the pouch of Douglas and from the rectum, and lifted upwards from the posterior pelvic wall as far as the sacral promontory. This appears to mark the usual limit of displacement, and the peritoneum thus raised appears to be sufficient to satisfy the requirements of the growing pregnancy to term. The anterior peritoneum is quite undisturbed, and an illustration approximately depicting the change in the peritoneal relations will have this outline (Fig. 31). On opening the abdomen at or beyond the full period of gestation the pregnancy is seen to be everywhere covered by peritoneum much as the uterus is in normal pregnancy, and it is not until the hand is passed behind the sac of pregnancy that one realises that the base of it fills the pelvis on the side from which it is springing, and that the peritoneum is reflected from above the pelvis directly on to the body of the pseudo-uterus. The real uterus is found beneath the sac of pregnancy and pushed to the opposite side. This condition has been recognised for some years as occasionally met with by the surgeon when operating for the removal of an extra-uterine pregnancy at term, but the explanation of the method of its production was until quite recently imperfect or wanting. In 1892 I reported a case and described the condition, drawing especial attention to the intra-peritoneal nature of the gestation-sac as viewed from the front after abdominal section. I also drew attention to the breadth of its base and to the position of the uterus, and expressed my conviction that the gestation-sac in this variety of ectopic gestation was formed by a "local development of the Fallopian tube and broad ligament."* Absolutely true as this opinion was, being practically a rough generalisation of the account I have now presented, there was not at this time sufficient evidence to warrant any detailed history of the local development or displacement of the broad ligament. My own case and others like it had ended favourably and, so far as I am aware, no full or *post mortem* investigation as to the exact relations of the sac had then been made. For more certain knowledge we

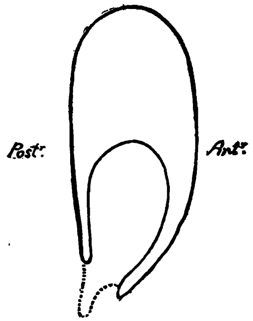

Fig. 31.

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* British Gynæcological Journal, August, 1892.

are indebted to Dr. Dunning's† case, in which the sac of pregnancy was enucleated from beneath the peritoneum and the relations of the peritoneum to the sac and the amount and character of its displacement admitted of demonstration. From the record of this case there can be but little doubt that Dr. Dunning is right in his contention that this form of pregnancy is produced in the first place by a retro-peritoneal invasion from the broad ligament, and that the majority of tubo-ligamentary pregnancies belong to this class or sub-division. My own case (already referred to) was as follows:—

Mrs. H. was a married woman, aged thirty-six years, the mother of three children, the youngest of whom was two years of age. The youngest was suckled for sixteen or seventeen months, menstruation recurring regularly during the greater part of the time. About one year ago the periods ceased, and although some hæmorrhagic discharge occasionally took place this was irregular and scanty. The abdomen soon began to swell and the patient supposed that she was pregnant, but she had never clearly felt any movements of the child. On Feb. 17th, 1891, I saw her in consultation with Dr. H. S. Cook and made the following note: "The patient is very emaciated, sallow, and anæmic. Her tongue is catarrhal and tremulous. Pulse 104 (weak). She is feebly apprehensive, crying out at the thought of any disturbance of position or possible pain from palpation of the abdomen. She has been confined to her bed for more than two months with rigors, occasional fever (temperature 102° F.), frequent vomiting, and marked prostration. Examination (under anæsthesia): the abdomen is enlarged and prominent, the enlargement being more marked upon the left side. The line of greatest girth measures 42½ in. The enlargement is caused by a firm, well-defined swelling, dull on percussion and obscurely fluctuant to touch, which occupies about three-fourths of the superficial abdominal area. It is lateral in position, filling the whole of the left side of the abdomen below the umbilicus and extending over about two-thirds of the right half of the abdomen. The upper limit of the tumour is circular or cresentic in outline, it crosses the middle line half-way between the umbilicus and ensiform cartilage and is continued downwards over the right half of the abdomen until lost to the right of the pubes. The tumour, so far as it can be examined, forms a regular globe and is tense or resistant to touch except over a limited area to the right of the umbilicus. Here a kind of *ballottement* or rather pressure through fluid to a more solid part beneath, can be distinctly made out. *Per vaginam* the uterus can be felt enlarged, distinct from the tumour, and pushed to the left by it. The cervix is not developed as in the pregnant uterus. The sound passes to 5 in. A large rounded mass can be felt in the pouch of Douglas; this appears to be the one with the abdominal tumour. Auscultation of the abdomen for any evidence of placental souffle or fœtal heart-beat is negative. An alternative diagnosis is made of extra-uterine pregnancy with dead fœtus or ovarian tumour."

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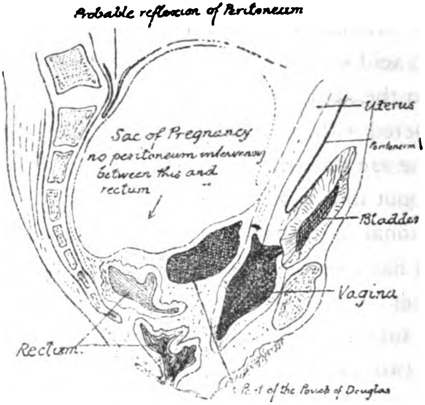
† American Journal of Obstetrics, July, 1897.

Operation was performed on Feb. 27th, 1891, when there were present Dr. Leslie Phillips (who assisted me) and Dr. Byron Robinson. I opened the abdomen over the area of least resistance already referred to, feeling assured that by so doing I should avoid the placenta. On dividing the parietal peritoneum, which was free from either displacement or adhesion, the wall of the tumour became visible, dark red or almost purple in colour. The hand could be passed in front of the tumour on either side and down into the pelvis. Behind the tumour it was stopped at the sacral promontory, and the peritoneum appeared to be reflected from the spinal column upwards over the posterior surface of the tumour. I tapped the cyst with an ovariotomy trocar and evacuated several pints of dirty brown fluid. On opening the cyst a child was seen within it, dead and beginning to decompose. I removed it. The child was of full size, and with the exception of some unnatural enlargement of the head was otherwise well formed. It was of female sex and weighed 6¾ lb. During the removal of the child the sac, which although thick was very brittle, tore slightly in a downward direction, and I noticed that great care was necessary in dealing with it. The upper part was strictly intra-peritoneal and free from adhesions except some to the great omentum, which were easily separated. It appeared to spring from the pelvis, having a very broad base with the uterus underneath it. Its interior was very foul, and after washing this out with boric acid solution I finished the operation by sewing the opening in the sac to the abdominal incision. The placenta was not interfered with. The cord was left hanging out of the wound and the sac was drained. The placenta separated and came away about four weeks afterwards; this took place without any constitutional disturbance. The patient made a perfect recovery, and has had a subsequent pregnancy perfectly normal in every respect.

Advanced tubo-ligamentary pregnancy must accordingly be divided into two sub-divisions or classes—(1) the anterior ligamentary, sub-peritoneo-pelvic or sub-peritoneo-abdominal pregnancy, and (2) the posterior-ligamentary or retro-peritoneal pregnancy. The first is established by *post mortem* proof and frozen sections, and does not admit of any doubt or question. The second rests mainly on operative evidence, but that evidence is confirmed by more than one operator, my own experience being exactly similar to that of Dr. Dunning, and I have very little doubt that in time this will be supplemented by the confirmatory evidence of *post mortem* dissection. Indeed, I have considerable grounds for believing that such evidence is already to hand and may be recognised in quite an old acquaintance—viz., the frozen section of an extra-uterine pregnancy, which is figured in Dr. Hart's and Dr. Barbour's Manual of Gynæcology (1883, p. 562-3). (Fig. 32). In a recent visit to Edinburgh, when looking over the preparations belonging to Dr. Hart and Dr. Barbour, I was struck by the fact that in this section no trace of peritoneum could be found between the sac of pregnancy and the sacrum or rectum, and on more closely examining it with Dr. Barbour the condition found appeared to be consistent with the theory that the pregnancy had been tubo-ligamentary, and that on the upper side of the section or the part removed the pregnancy had entirely lifted the peritoneum away from the pouch of Douglas and the rectum, while in and beyond the level of the section some remains of the pouch of Douglas still existed in front of the pregnancy. The pregnancy itself was therefore strictly posterior-ligamentary or retro-peritoneal, and we have accordingly anatomical as well as surgical evidence of the existence of this as a special form of pregnancy. If we turn again to Fig. 22 we shall see, I think, that this must also have been an example of the posterior or retro-peritoneal form of broad ligament pregnancy. Although the bony pelvis is not present the position of the sac as regards the uterus and rectum appears to make any other interpretation quite impossible.


Probable reflexion of Peritoneum
Sac of Pregnancy no peritoneum intervening between this and rectum
Uterus
Peritoneum
Bladder
Vagina
Rectum.
Pt. of the Pouch of Douglas

Dr. Barbour's Frozen Section.

Fig. 32.

There are two points worthy of further notice in the progress of a tubo-ligamentary pregnancy towards "term." The one relates to the development of the sac, the other to the position and integrity of the child and placenta. In the earlier months space for the growing pregnancy is gained (as we have seen) almost entirely by displacement of the peritoneum, and this may be continued more or less throughout the whole period of gestation. In the later months another process of accommodation takes place, and further space is obtained rather by development and extension or dilatation of the sac already formed than by further invasion of subperitoneal tissues, so that at term, although the pregnancy is entirely outside the peritoneum, it is not much more so than when *in utero*. For it must be remarked that every normal intra-uterine pregnancy is from the anatomical standpoint entirely superitoneal throughout, and yet the distended uterus forms an intra-peritoneal tumour. Similarly, although the base of the broad ligament pregnancy is entirely below the peritoneum, in most cases the upper part of the sac is intra-peritoneal and forms a tumour of considerable size. This applies to both forms of tubo-ligamentary pregnancy, particularly to the posterior or retro-peritoneal, where the sac of pregnancy forms a pseudo-uterus, which is almost entirely an intra-peritoneal tumour. To a less extent it may be seen in the sub-peritoneo-abdominal form also. If we turn again to the illustration (Fig. 30) of Dr. Berry Hart's and Mr. Carter's case of advanced tubo-ligamentary gestation, we find that the fœtus is crowded down into the pelvis and mainly beneath the peritoneum, but the upper pole of the pregnancy containing the placenta reaches high into the abdomen and forms an intra-abdominal tumour covered by unbroken peritoneum and very comparable to the tumour formed by a pregnant uterus at a similar period of gestation.

With regard to the placenta, I have only to draw attention to my belief that its position is inseparably bound up with the position of the Fallopian tube and that its final resting-place is therefore also the final resting-place of the tube. In the large section of advanced pregnancy figured by Dr. Hart and Mr. Carter traces of muscle tissue probably belonging to the tube were found, as Dr. Hart has told me, at the very top of the gestation sac. And this section shows, I believe, the greatest displacement of the placenta on record. In my opinion the original relative positions of the child and placenta are fixed at the time of invasion of the broad ligament or abdomen. In tubo-abdominal or ventral pregnancy the child is uppermost. In tubo-ligamentary or broad ligament pregnancy the child is undermost, its relative position to the placenta being fixed by the relative position of the tube to which the placenta is attached. If the relative position alters during the course of the pregnancy, as it evidently does to a considerable extent in the later stages of the posterior ligamentary or retro-peritoneal form of tubo-ligamentary pregnancy, it is because the sac develops posteriorly to the tube and therefore affords room for the child to pass behind the placenta and so to attain a higher position. Similarly, in the sub-peritoneo-abdominal form it may be quite possible for the child to pass in front of the placenta during the later stages of its growth. If the placenta occupy the highest part of the sac during the later stages of pregnancy it affords evidence of extreme dislocation of the tube, and such a case is liable to hæmorrhage and rupture however far advanced the pregnancy may be. The placenta will suffer from local hæmorrhage and the pregnancy will be liable to terminate disastrously before the full period of development. In those cases which go to "term" the placenta is usually fully equal to the nutrition of the child, and though much has been written on the faults and lesions of the extra-uterine placenta as responsible for failure and defects of the extra-uterine fœtus, I cannot say that the relationship appears to me to be by any means established. So far as my own experience goes the extra-uterine child at term in size and weight and general nutrition is in no way behind the average. But the child is often locally defective or malformed, such defects or malformations almost invariably corresponding to some long-continued pressure exerted by the bony skeleton of the mother on the extra-uterine fœtus. These malformations are most commonly met with in children of abdominal or ventral pregnancies. The children of ligamentary pregnancies, and particularly those of the posterior variety, may be free from any visible defect whatever.

3. TUBO-UTERINE PREGNANCY (SYN., INTERSTITIAL PREGNANCY).

Tubo-uterine or interstitial pregnancy is a rare condition, and there are only a few specimens which are readily available. Strictly speaking, this pregnancy is not really extra-uterine or only becomes so by rupture into the abdomen, but the pregnancy is "ectopic," outside the uterine cavity, and it is perhaps the most dangerous of all the forms of ectopic gestation. In most of the specimens of this disease or accident it appears to be the tissue on one side of the fundus which is mainly invaded by the growing pregnancy. The obstruction to the passage of the impregnated ovum and its primary attachment is probably exactly at the uterine ostium of the tube. This refuses to admit the passage of the "oosperm," the ostium is pushed before the growing ovum as it increases in size, and a burrow is formed into the uterine tissue (above or to one side of the cavity of the uterus), where the pregnancy finds a temporary resting-place and bed. This naturally raises the height of the uterus on the side affected, and in all the specimens I have seen the asymmetry produced by this has been very noticeable, the Fallopian tube of the non-affected side appearing to enter the uterus at a lower level midway between the (altered) fundus and cervix. In one of the best known specimens (No. 2,517^{90} of the Guy's Hospital Museum) the uterine appendages of the opposite side appear to have been removed, with the unfortunate result that this asymmetry is not readily recognisable. The sac of pregnancy appears to lie across the fundus from right to left, and this is decidedly the impression given of the specimen by the illustration in Mr. Bland Sutton's book.* In reality, however, as the following more recent sketch (Fig. 33) will show, the unaltered part of the fundus lies altogether to one side of this sac of pregnancy, and the raw surface where the opposite appendages have been removed shows that there is quite as much distortion in this specimen as in that of the Royal College of Surgeons of

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* Surgical Diseases of the Ovaries and Fallopian Tubes, 1891, Fig. 103, page 349.

England (4,691), the other specimen in Guy's Hospital Museum (2,517^{65}), and in the specimen presented by Mr. Tait now standing in the Mason College Museum (Fig. 34). All show alike that the Fallopian tube and fundus of the side affected are very considerably raised above the level of the fundus and appendages of the opposite side, and that the tubes accordingly appear to enter the uterus at different levels. This asymmetry may be simulated by pregnancy in one part of a double uterus

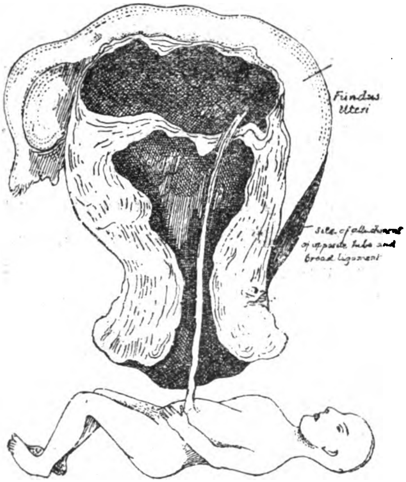
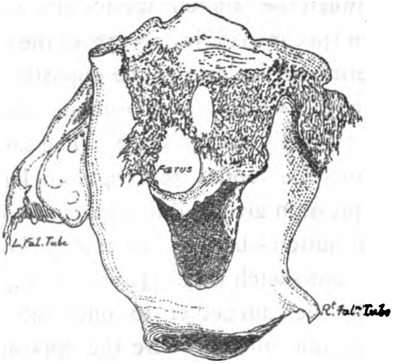


Fig. 33.



Upper part of Uterus (& pregnancy) removed

Fig. 34.

or by cornual pregnancy in a bi-corned uterus, and, indeed, several supposed specimens of interstitial pregnancy have been found on close examination to be of this nature. In both of these conditions, however, there is always some angle, more or less well-marked, where the double organs join, and this is of course absent in a tubo-uterine pregnancy.

A tubo-uterine pregnancy may continue to grow for several weeks to the end of the fourth month or even longer, between uterine peritoneum on the one hand and uterine mucous membrane on the other. Sooner or later rupture takes place, either downward into the cavity of the uterus or upward into the abdomen. The former method of rupture is a highly probable occurrence, and if it occurred would presumably be followed by spontaneous healing of the wounded tissue and normal delivery at term, but in spite of the slenderness of the bridge of tissue usually existing between the sac of the pregnancy and the cavity of the uterus we have no positive demonstration that this has ever taken place alone. The only rupture that is known to occur is rupture into the abdomen (or into the abdomen and uterus simultaneously), and the result of this is always apalling. Diffuse hæmorrhage, worse (if possible) than that which takes place with early rupture of the tube, is the main feature of the pregnancy, and hitherto this has always proved fatal in a very few hours. The only case approaching or possibly belonging to this class which I have met with in the living subject is the thirty-second of my series.

Mrs. I., aged 27 years, had been married for seven years. She had had three children. the youngest of whom was 19 months old. She was "regular" until May 6th, 1896, and since this date (until Sept. 10th) has had almost constant discharge of brownish blood. During the latter part of this time she suffered from abdominal pain and tenderness. Early in September this notably increased, and the severity of the pain necessitated her confinement to bed. On Sept. 8th I saw her and found the abdomen distended and acutely tender. A fixed hard tumour was felt on the left side, having a crescentic outline and occupying the whole of the left inguinal region.

On vaginal examination the mass was felt to be one with the uterus, but on passage with the sound no increase was found in the length of the uterine cavity. The patient stated that the swelling was rapidly increasing in size and the lump in the abdomen had only been noticed for a few days. The patient's lips were pale and her pulse was rather quick and feeble. A diagnosis was made of the left tubal pregnancy with hæmatocle, and operation was done on Sept. 10th, 1896. On opening the abdomen a large sac was exposed formed by the expanded left cornu of the uterus, the left tube and the left ovary, and containing placental remains. This was adherent to omentum and intestine, the union with the latter being so intimate that separation had to be made by incision. When the sac was fully freed, opened, and cleaned it was seen that the inner part of the pregnancy had apparently invaded the uterine tissue of the cornu, and this, together with the base of the sac and broad ligament, was ligatured off from the rest of the uterus in four sections, leaving a long oblique wound on the left side of the fundus. The hæmorrhage was then controlled and the abdomen was closed, a drain being left in the pelvis. The patient made a good recovery.

On examination of the specimen removed it appears, I think, as if the pregnancy had been originally purely tubal and (probably) a pregnancy of the outer part of the tube, that it had become firmly adherent to the uterus and ovary, and had quite secondarily invaded the side of the uterus in process of growth. If so, it is a special form of tubo-uterine pregnancy, which at present is unrecognised and certainly demands our attention. A specimen recently shown to me by Dr. Cullingworth, and already referred to in my first lecture, appears to me (at all events, so far as I have been able to examine it) to be of the same nature as regards the invasion of the uterus. This specimen is one in which a tubal (or tubo-uterine) pregnancy has been complicated with myoma of the uterus. The fœtus is contained in a curious diverticulum of the tube, while the placenta appears to have invaded the substance of the uterus. The upper part of the uterus (containing both pregnancy and myomata) was removed by hysterectomy, and the following is a rough sketch of the parts removed (Fig. 35). In this case there had been no intra-peritoneal bleeding at the time of operation. Whether Dr. Cullingworth would agree with me or not I am unable to say. but it appears to me that this is (like my own) a tubal pregnancy which has quite secondarily invaded the uterus.

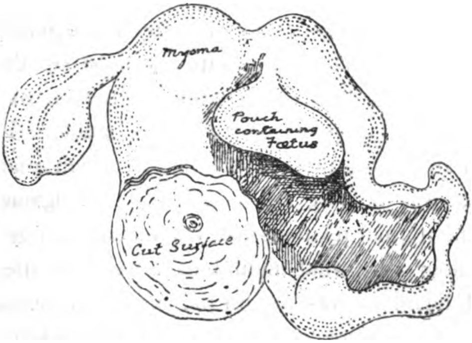


Fig 35.

There are then, I believe, two varieties of tubo-uterine pregnancy: the one, "primary," long recognised under the term of "interstitial," and hitherto regarded as the only kind of tubo-uterine pregnancy; the other, "secondary," caused by later invasion of the uterus from the tube and mainly involving the uterus by the growth of its placenta or by a burrowing hæmorrhage connected with this growth.

In some of the older statistics of extra-uterine pregnancy cases of "interstitial" pregnancy figure largely and in far higher proportion than in any statistics obtained from later experience. Thus in Parry's 500 cases 31 are stated to have been "interstitial," while in Hennig's list of the same date (1876) in 150 cases 42 are reckoned as interstitial. These numbers must almost necessarily be largely mistaken, since any recent specimen is only of rare occurrence, and it is highly probable that some tubo-ligamentary and cornual pregnancies have been included by mistake. When a specimen is difficult to place, the position of the round ligament with regard to the pregnancy is sometimes of service in deciding its true character. This should be on the uterine side of a tubal or tubo-ligamentary pregnancy, while it should be on the other side or in the anterior wall of an interstitial or cornual pregnancy. The position of the round ligament as a guide to the differentiation of cornual pregnancy was first pointed out by Virchow, afterwards utilised by Professor Sir William Turner of Edinburgh, and has proved of very great value. It is not, however, an infallible guide. I have quite lately seen an intra-ligamentary tumour in which a large mass of the tumour was bulging between the round ligament and the uterus. The normal relations had been so altered by the growth of the tumour that what should have been the uterine end of the round ligament was lost on the surface of the tumour, and no direct connexion could be traced between the round ligament and the uterus. Yet the latter was intact and the tumour was removed without any injury to the uterus. This occurred in the hospital practice of my colleague, Mr. J. Furneaux Jordan (February, 1898).

SUPRA-PUBIC CYSTOTOMY COMBINED WITH EXTERNAL URETHROTOMY FOR IMPERMEABLE URETHRAL STRICTURE, WITH A REPORT OF NINE CASES.*

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THE term "Impermeable Stricture" has well been described by Sir Henry Thompson, in his Lecture on the Urethral Stricture, as denoting "the quality of the surgeon and not the condition of the stricture."† For where there is a passage for urine to escape externally there must be a passage capable of admitting some kind of instrument. Syme and Liston also went so far as to deny the existence of a stricture through which an instrument could not be passed by patience and perseverance if urine could trickle through it from the bladder. Severe injuries of the urethra do occasionally completely obliterate it, and specimens exist in some of our museums illustrating such obliterations with the formation of fistulous openings behind the rupture. But with this exception the great majority of strictures, however tight, can by patience and perseverance be dilated with instruments passed down the urethra and through them.

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* Read before the Birmingham and Midland Counties Branch of the British Medical Association, March 10th, 1898.

† Stricture of the Urethra. By Sir H. Thompson. Fourth Edition, p. 179.

There remains, however, a certain small number of cases in which, despite every effort, no instrument can be passed through the stricture, or where, owing to other complications, we shall best consult our patient's interests by at once dividing his stricture from the surface; and it is to these cases that external urethrotomy should be limited.

The chief indications for the operation may be briefly summed up as follows:—

1. As a substitute for tapping or aspirating the bladder in cases of acute retention of urine with stricture; after failure of all attempts at catheterisation.

2. When a tight or impermeable stricture is complicated with acute cystitis with decomposing fœtid urine in the bladder.

In such cases drainage and irrigation of the bladder is an urgent necessity, and the repeated passage of small instruments along a narrowed urethra will only aggravate the patient's condition by setting up a reflex irritation.

3. When after repeated extravasations and perineal abscesses the perineum is converted into a hard, brawny, inflammatory mass with fistulous openings.

4. When the stricture, after repeated dilatations, is extremely irritable and resilient, quickly closing up again.

The method of opening the urethra which is at the present time most usually adopted, when external urethrotomy is called for, is that devised and perfected by Mr. Wheelhouse and which goes by his name. A part of the urethra, immediately to the distal side of the stricture, is opened upon a staff, and the orifice of the stricture being found, the narrowed urethra is laid open from its distal side into its dilated proximal portion.

It is an operation which has many advantages over that formerly in vogue and has given excellent results. Certain difficulties however occasionally arise in its performance, which may render the operation one of extreme difficulty, or may in bad cases even prevent its performance altogether. A second stricture in the penile portion of the urethra may prevent the passage of the staff down to the main one. It will then be necessary to dilate this before it is possible to perform the operation. False passages are often present into which the staff passes on each attempt to reach the main stricture. The perineum, in cases of long-standing, may be riddled with such false passages which preclude the passage of any instrument down to the main stricture. But the main difficulty which arises during the operation is that of finding the proximal end of the urethra after the distal portion has been opened. In uncomplicated cases, without any false passages, and where the stricture though tight is not surrounded by dense inflammatory tissue, this is as a rule a matter of simplicity. But when the mucous lining of the canal has been destroyed by ulceration, and the urethra changed from a mucous tube into a tortuous intricate slit in the midst of a dense mass of inflammatory tissue, riddled perchance with false passages and fistulous openings, it is sometimes a matter of absolute impossibility to find the real stricture.

Hæmorrhage also frequently complicates matters. There is a general ooze from the inflammatory tissues divided in opening the distal urethra, which, though not profuse in amount, materially adds to the difficulty of the operation by obscuring the view of the parts.

The operation in a complicated case thus becomes a most lengthy and tedious one. Its seriousness is immensely increased by the long exposure and chilling of the patient during its performance and the unavoidable bruising and laceration of the soft parts of the perineum during the surgeon's efforts to find, and pass an instrument through the stricture. I have myself seen it abandoned and the patient put back to bed unrelieved, to have a supra-pubic cystotomy performed on him at a later date.

Some years ago, while assisting Mr. Chavasse at such an operation, this difficulty presented itself. The patient's perineum was converted into one hard mass of dense inflammatory tissue by old-standing inflammation, and there was more than one false passage. After searching vainly in this dense indurated tissue for the passage into the proximal urethra, we decided to open the patient's bladder above the pubes and to pass an instrument into the proximal portion of the urethra from its vesical orifice to serve as a guide to us in the perineum. This was quickly done, and I was much struck at the rapidity with which all our former troubles vanished, and the ease of the subsequent steps of the operation. The catheter was passed through the supra-pubic opening in the bladder into the proximal urethra until its point projected in the perineum. This was cut down upon, the proximal urethra thus opened, and the remaining steps of the operation were quite simple, the patient making an excellent recovery.

Since then I have had occasion to perform the operation of external urethrotomy twelve times. They have all been cases where, in spite of repeated attempts, catheterisation has completely failed to relieve the patient's symptoms, and in several of the cases the perineum has been riddled with false passages and fistulas. In three of these cases, as there seemed no difficulty in the way of an ordinary Wheelhouse's operation, that was the one I performed. In the remaining nine I performed the operation to which I have already briefly alluded, and to which I wish to call your attention to-day.

I will first of all shortly describe the various steps of the operation as I now perform it.

In order to open the urinary bladder above the pubes without risk of wounding the peritoneum, it is very desirable that it should be in a state of moderate distension. In the majority of cases such distension is already present owing to the patient's difficulty, or in some cases complete inabilty, to force urine through his strictured urethra. If the bladder be not already full it is necessary to distend it, and as this is impossible to do per urethram, he is given draughts of some bland fluid about four to six hours before the proposed time of operation.

The instruments for the operation are the same as those used in an ordinary external urethrotomy, with the addition of two pairs of long catch forceps for securing the bladder when opened, a No. 10 silver catheter, several black olivary-headed catheters, and a piece of rubber drainage tubing some 2 ft. in length and the gauge of a No. 10 catheter.

The patient, being anæsthetised, is drawn to the end of the operating table, and the operator, standing between his legs, opens the bladder above the pubes in the usual manner. When opened, the edges of the opening in the bladder are stitched to the edges of the wound in the transversalis fascia to counteract the tendency of the bladder during the first few days, when empty and collapsed, to drop back into the pelvis. The forefinger of the left hand is then passed into the bladder through the supra-pubic opening, and the vescical orifice of the urethra made out. With the forefinger resting on its orifice, a No. 8 olivary-headed bougie is passed into the bladder and guided by it into the urethra. It is passed without difficulty along the dilated proximal urethra until arrested in the perineum by the stricture. The finger is then withdrawn, and the bougie given to an assistant to hold. The patient is then quickly brought into the lithotomy position, and a mesial incision made in the perineum down on to the bulbous end of the bougie in the proximal end of the urethra at the stricture. This is a matter of extreme simplicity, as in deepening the wound the instrument can easily be felt through the tissues of the perineum. The urethra is thus opened on the proximal side of the stricture with certainty, and without any bruising and laceration of the parts. It remains to open the urethra in the distal side of the stricture. This is done in the way described by Mr. Wheelhouse. The urethral tissue between the two openings—that constituting the stricture—is lastly divided. The Wheelhouse staff is now withdrawn, and a No. 10 or 12 olivary headed catheter passed through the penile urethra into the perineal wound. The end of the catheter in the penile uretha is then fixed to the olivary head of the bougie projecting from the proximal urethra, and the latter is gently withdrawn into the bladder by the assistant. As it is withdrawn it guides the No. 10 catheter through the divided stricture and proximal urethra into the bladder.

To facilitate the after treatment I am accustomed, after disconnecting the two instruments, to pass a fine silk suture through the solid bulbous end of the catheter left in the bladder, and to leave the end of the silk hanging out of the supra-pubic wound. The silk serves a double purpose—it prevents the catheter being drawn out of the urethra by any movement of the patient during sleep, and so obviates all necessity of tying it in, and at the same time it is a great help in the after treatment of the case when it becomes necessary to change the instrument. All sinuses and fistulæ are then slit up, and their lining-membrane scraped away with a sharp spoon. The perineal wound is lightly packed with iodoform gauze, which may be removed on the following day. The perineal wound, being a clean cut one, rapidly granulates up, and in Case No 8 was sound in a fortnight. The supra-pubic opening heals more slowly, but is usually sound in about six weeks.

The operation of changing the catheter is performed the first few times as follows. The bulbous end of the catheter is withdrawn through the supra-pubic wound, by traction on the silk thread fixed to it This is cut through, and a piece of rubber drainage tubing about twelve inches in length slipped over its bulbous end and tied on. The catheter is then withdrawn through the penis and draws with it the soft tubing through the bladder and urethra. When the end of the tubing appears through the external meatus the old catheter is removed, a new olivary-headed catheter fixed to the tubing in like manner, and this is drawn through the urethra .into the bladder by traction on the rubber tubing. In this way the urethra is kept patent without any interference with the perineal wound and without any risk of being unable to pass a second catheter after withdrawal of the first.

Case 1.—W. T., a groom, admitted into the General Hospital on September 8th, 1893. History of stricture for many years. Had been an in-patient in the hospital four years ago for the same trouble. Four months ago a urinary abscess formed in the perineum which burst, leaving a urinary fistula which is still discharging. Hard brawny swelling all along the perineum. Urinary fistula on right side of scrotum. On micturition only a few drops of urine escape from the meatus. Repeated attempts made to pass instruments. All failed. Sept. 8th. Combined cystotomy and external urethrotomy. Urinary fistula slit up. Had several rigors during convalescence. Discharged well with both wounds sound and passing a No. 10 bougie on Oct. 28th.

Case 2.—F. T., æt. 44. History of stricture for many years. Has had an external urethrotomy performed on him six years ago at another institution. Perineum riddled with sinuses. Complete retention of urine with a long penile false passage. March 9th, 1894. Cystotomy and external urethrotomy. Large abscess found between the pubic bone and the bladder. Usual after-treatment. Discharged with all fistulæ soundly cured and passing a No. 10 bougie.

Case 3.— —, æt. 50, admitted to Hospital Sept., 1894, with extravasation of urine, the result of long-standing urethral stricture. Patient had for many years several sub-perineal fistulæ. Free incisions made into infiltrated tissues. Cystotomy and external urethrotomy. Two perineal fistulæ slit up. Convalescence prolonged owing to slow healing of fistulæ. Discharged with perineum sound, and passing No. 10 bougie.

Case 4.—C. B., æt. 29. Traumatic stricture, caused by fall seven years ago. Complete retention for two days. Bladder distended up to umbilicus. Aspiration for 48 hours. Cystotomy and external urethrotomy, Aug. 17, 1894, followed by complete relief to all his symptoms. The patient had no more trouble with his urinary organs, but a few days after the operation complained of cardiac trouble, which increased until his death on September 1st, a fortnight later. At the *post mortem* the heart muscle was in a state of acute fatty degeneration, and all its cavities much dilated. The bladder and urethral wounds were looking quite healthy.

Case 5.—T. D., æt. 46, stricture for 25 years. Complete retention nine years ago and again one year ago. On admission retention for 24 hours. Bladder aspirated three times. Repeated attempts made with and without anæsthetic to pass an instrument. May 25th, 1895, supra-pubic cystotomy and external urethrotomy. Convalescence retarded by cystitis. Discharged July 25th with wounds soundly healed and passing No. 10 bougie once a week.

Case 6.—W. T., same patient as No. 1. Had not passed any instrument for three years since operation, Sept., 1893. Oct. 14th, 1894, supra-pubic cystotomy and external urethrotomy. Scar above pubes slow in healing. Discharged with wounds sound, passing No. 12 bougie.

Case 8.—G. F., æt. 31, admitted Aug., 1895, with acute cystitis and acute interstitial nephritis. Impermeable stricture, 5½ in. from meatus. Daily rigors with partial suppression of urine. Aug. 27, 1895, supra pubic cystotomy. Bladder irrigated and drained. Rapid improvement. Aug. 31, operation completed. External urethrotomy performed, and No. 10 catheter tied in. Oct. 25th, discharged well.

Case 8.—Private case, with Dr. Fraser, of Sutton Coldfield. Male, aged 72. Urethral stricture with enlarged prostate. Aug. 18, 1897. Prolonged attempt to perform ordinary Wheelhouse's operation. Proximal end of urethra not found. Supra-pubic opening made and operation rapidly completed in usual manner. Patient made an excellent though slow recovery. The supra-pubic wound closed at the end of eight weeks. In Feb., 1898, Dr. Fraser reports that the patient is in excellent health in every way, and has no trouble whatever with his water.

Case 9.—G. P., æt. 68, admitted into Hospital Jan. 27th, 1898, with a perineal fistula. Cystitis and impermeable stricture of the urethra.

Previous History.—The patient had gonorrhœa when 20 years old. Three years afterwards he began to suffer from stricture, and has been under medical treatment on and off ever since. Five years ago a false passage was made during an attempt to pass an instrument for retention of urine. Extravasation of urine followed into the tissues of the perineum. Two incisions were made for its relief, and the patient has had a urinary fistula in the posterior part of the scrotum ever since. He has had frequent and painful micturition for the last four years, and has had to wear an indiarubber urinal to collect the urine which dribbled away from the fistula. Many attempts have been made lately to pass instrumets, but none have been passed since the fistula appeared. For six weeks he has had an attack of acute cystitis, which has aggravated all his symptoms. He is also troubled with obstinate constipation.

On admission he was a feeble old man, looking considerably older than his true age. Urine is almost constantly dribbling away from the penis and fistula in about equal quantities. The urine is alkaline, extremely offensive, contains albumen and a thick deposit of pus. Per rectum the prostate was found to be much enlarged, and there was a hard tender tumour in the back wall of the bladder beyond the prostate. Systematic attempts made on five occasions to pass instruments. All bougies and catheters arrested 5½ inches from meatus. As the patient's condition was a most miserable one—he was passing urine with great pain every half-hour day and night, and his cystitis was no better in spite of medical treatment—it was decided to operate upon him. Feb. 14th, operation. Bladder previously distended by copious draughts of milk and soda water. Combined supra-pubic cystotomy and external urethrotomy. Prostate found enormously enlarged. Two urethral strictures, one each side of the urinary fistula. No. 11 black catheter passed and tied in in the usual manner. A large encysted stone about the size of a pear found impacted in a saccule at the trigone of the bladder (or in the ureter). No attempt made at operation to remove it. His cystitis rapidly disappeared and the urine lost its offensive character, while his general condition greatly improved. On March 6th he was again anæsthetised and the supra-pubic opening enlarged. The small opening into the saccule was enlarged, and two large uric acid calculi were with difficulty removed. They were firmly fixed in a saccule behind and to the right of the prostate, which contained in addition much offensive pus. After the second operation his convalescence was most rapid. Both wounds were soundly healed by the end of the month, and he left the Hospital early in April able to pass a No. 12 metal bougie and passing his water quite naturally.

No claim for originality is made for the method which I have thus endeavoured to describe, and which was adopted in the nine cases just related. All I would wish to do is to indicate and formulate certain definite operative steps which may be of value in such cases, and to call attention to some of the advantages which such a combined operation affords in the more complicated cases of impermeable urethral stricture.

The shock of the operation is less than after a prolonged search for the proximal urethra through the perineal tissues. The bruising of these tissues is less, so that the wound heals more readily and quickly. Both proximal and distal urethras are with certainty opened. Convalescence is a little longer, as the supra-pubic wound takes rather longer to heal than the perineal one, but during the period of convalescence the urethra—relieved of its function as a passage for urine—is given a complete rest, and healing of the stricture can take place under the most favourable conditions. Where acute cystitis exists in addition to the stricture (as in cases No. 7 and 9) the supra-pubic opening tends to drain the bladder cavity.

In conclusion I would repeat that external urethrotomy should be reserved for cases of urethral stricture of great severity, or complicated by other conditions which render the treatment by the usual methods impossible or undesirable.

The ordinary method of division of the stricture from the distal into the proximal urethra is the best one to perform in the majority of such cases and is often an operation of simplicity. But in complicated cases, or where much difficulty is anticipated, the operation which I have briefly described will be found both simpler and quicker, and in future I shall always perform it in such cases, and be prepared to do it when in the performance of an ordinary Wheelhouse any difficulty is encountered.

THE UTILITY OF INTUBATION OF THE LARYNX.*

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THE treatment of laryngeal obstruction by Tubage of the Larynx was first advocated by Bouchut in 1858. In September of that year he read a paper on the subject before the Academy of Medecine of Paris, and his conclusions were :—

1. Tubage can be easily accomplished by means of a cannula fastened upon the vocal cord, without interference with the function of the larynx.
2. The larynx tolerates the cannula.
3. The dyspnœa of croup can be relieved without tracheotomy.
4. The membrane is easily expelled through the tube.
5. It is advantageous to the country practitioner far from assistance.

Unfortunately for Bouchut the profession of Paris, led by Trousseau, condemned and even ridiculed the new method. The committee of investigation reported as follows :—

1. In certain acute laryngeal affections it might prove of value.
2. In chronic diseases of the larynx it will allow one to delay tracheotomy, and sometimes relieve and cure the affection.
3. It can only very rarely supplant tracheotomy.

Bouchut's instruments consisted of hollow cylinders narrower

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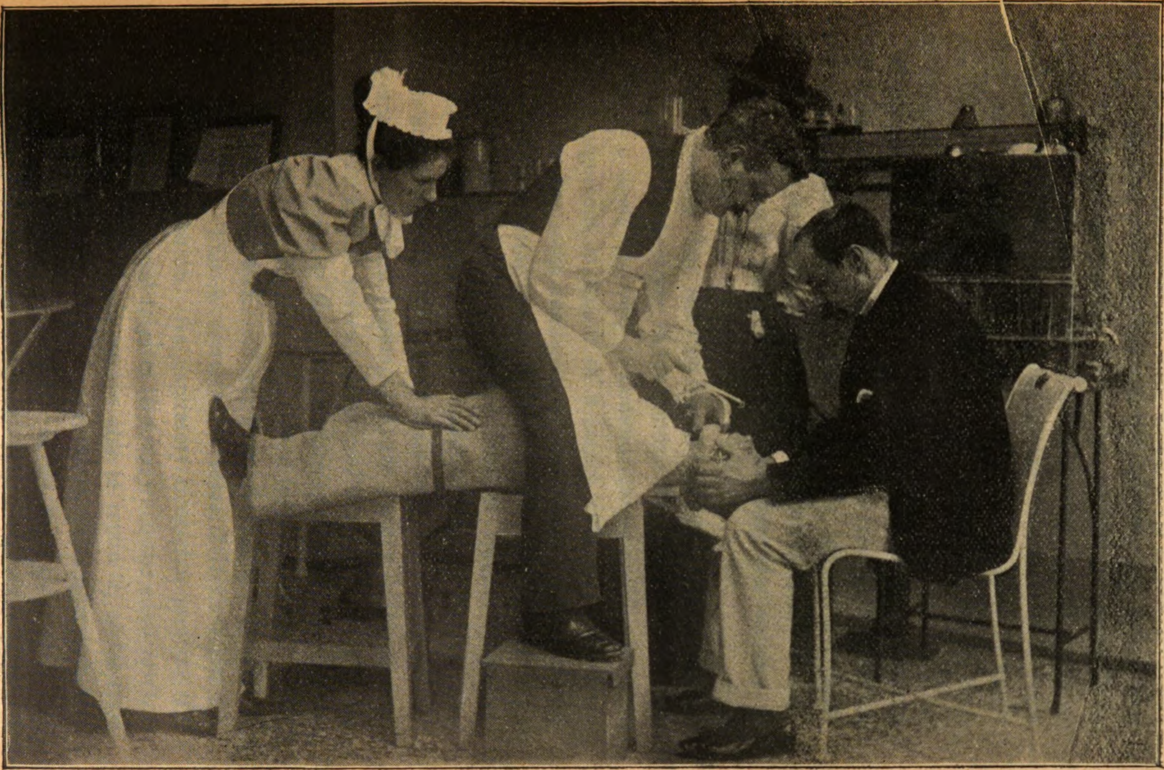
* A paper read at the Birmingham and Midland Counties Branch of the British Medical Association.



at one end and less than an inch long. They rested upon the vocal cords and did not reach into the trachea. A thread was left attached and brought out at the angle of the mouth to facilitate removal and prevent it being swallowed. He unfortunately claimed that one boy had spoken with an audible voice after tubage, and this tended to augment the ridicule with which his observations were received, and the procedure passed into desuetude.

Catheterism of the larynx has at various times been attempted by MacEwen and others. Dr. Joseph O'Dwyer, however, without any knowledge of any prior attempts, after a very large number of experiments at last produced instruments of a satisfactory nature and succeeded in establishing the validity of Bouchut's statements.

The incentive that led him to make these experiments was the failure of tracheotomy in his hands. He says—"We could not show a single recovery to demonstrate its usefulness. We had no argument in favour of it except euthanasia, and not a few of even the most intelligent of the laity fail to understand how a child's suffering can be relieved by cutting its throat."

These instruments have passed through various stages of evolution. The tube essentially consists of two parts, the tube proper and the head. The head rests on the vocal cords and prevents the tube from slipping into the trachea. The apex of the head rests against the commissure of the aryepiglottic folds, and the orifice of the tube is therefore tucked away under the epiglottis which tends to prevent food from entering it. The tube has a retaining swell half way down its length to prevent it being expelled. This is therefore at some distance below the cords when in position. An expiratory blast that projects the tube upwards has spent most of its force when the swell reaches the cords, and so the latter are able to retain it, which they might not have been able to do had the swell been immediately under the glottis and the full force of the blast spent on trying to force the tube through the cords. The mass of the tube and its inertia also assist retention. The longitudinal axis used to be straight, but when the tube is in position the lower end came into slight but actual contact with the anterior wall of the trachea and occasionally gave rise to ulceration, perichondritis, and necrosis of cartilage. Tubes are now made with longitudinal curve with the convexity forwards so that the lower extremity quite clears the anterior tracheal wall.

The tube should be heavily plated with gold. Nickel or silver plating readily produces sulphides. Even gold plating is not immune from concretions, and has to be withdrawn to be cleaned at least once a week. Latterly Dr. O'Dwyer has discarded metal tubes and used vulcanite with a thin metallic lining to the lumen to give it strength.

For introduction an obturator, jointed in the middle, fits accurately into the tube, so that a probe-pointed end is presented to the larynx. This obturator screws on to the introducer. The introducer consists of an arm bent at right angles fitting into a handle. In O'Dwyer's introducer a trigger key is provided to push the tube off the obturator. As this can be done equally well by the left index finger pressing on the tube, I believe the trigger to be unnecessary, and the simpler and more cleanly introducer of Stavely is to be preferred. The obturator should be screwed home firmly so as to prevent rotation while being introduced. When this is done it not unfrequently happens that the major axis of the head does not lie antero-posteriorly owing to some failure of adjustment by the maker or a slight wear of the thread of the screw. This is very inconvenient, and instrument makers say it is difficult to avoid. Further, when ordering new tubes it is very difficult to get them adjusted to one's own introducer and it is necessary to get a new introducer. To obviate this, two and a half years ago I had obturators made with a horizontal arm with an eyelet-hole at the head, screwing into the straight arm of the introducer. Here no adjustment of the screw is necessary. The major axis of the tube is always fore and aft, and fresh tubes and obturators must necessarily fit your introducers. There is another advantage. In O'Dwyer's and Staveley's introducers you must screw up your obturator before threading the tube and eyelet, otherwise your thread wraps round the tube. With my obturator you can thread tube and eyelet before screwing the introducer on the handle. Now it is a great advantage to have one or two tubes and eyelets ready threaded in case the tube you selected might not be the right one.

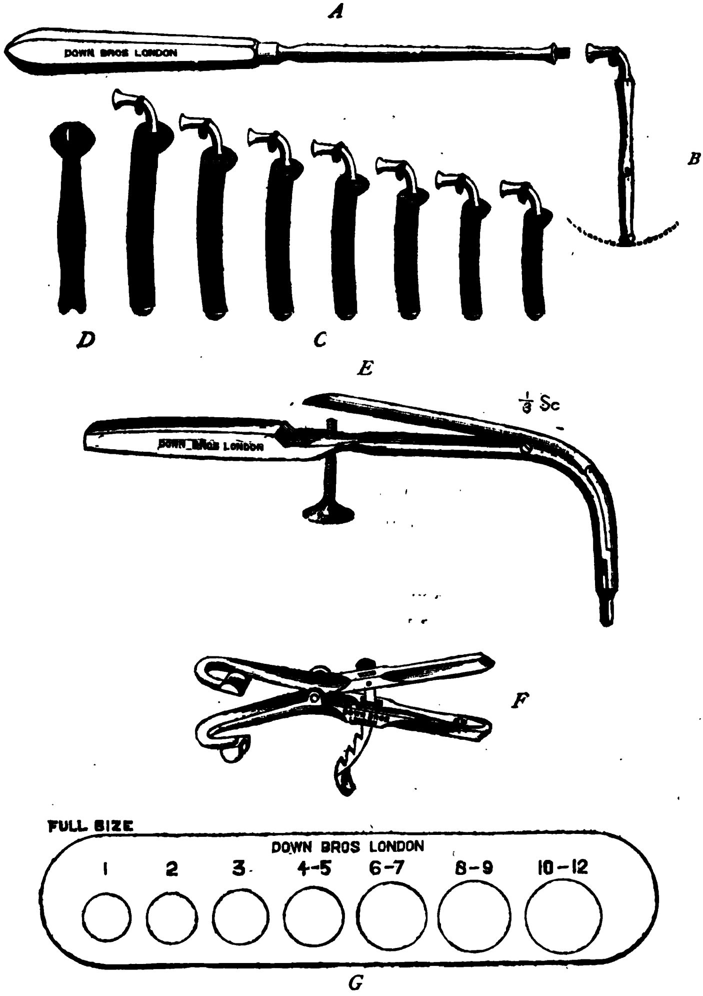


Fig. 1. The instruments used by the author.

A The author's introducer. *B* The author's obturator. *C* Set of the latest pattern O'Dwyer's tubes seen from the side with the author's obturators *in situ*. *D* Tube seen from the front. *E* O'Dwyer's extractor. *F* Denard's gag. *G* O'Dwyer's age gauge.

For the purpose of expelling loose membrane short cylinders are used. They are cylindrical, with no retaining swell, and are very thin, so as to give the maximum lumen, and are much shorter than the long tubes. The heads are circular or subtriangular, and are provided with an eyelet hole. They are metallic and nickel plated, gold plate not being necessary. The introducer or (if the writer's modification be used) the obturator has a long curve to carry the tube well home. The largest possible size should be used and wedged into the larynx, and retained only for a few hours at the most.

The most suitable gag is Denard's, which gives a very firm grip of the jaws. The extractor is a diverging forceps, and the divergence of the blade is regulated by a set screw. The scale gives an idea as to what tube is most suitable for any given age.

Indications for Operation.—Northrup says:—"When a progressive, unremitting dyspnoea, despite all previous treatment, allows any considerable part of the posterior portion of the lungs to become non-inflated, when the laboured breathing begins to produce sensible exhaustion, intubation is to be performed promptly." The American larnygologists speak very highly of preliminary calomel fumigation as averting many threatening cases from operative interference. I have tried it again and again according to their instructions without any material benefit except in slight cases, and am inclined to regard it as waste of valuable time. When a case presents larynxgeal stridor, marked recession, blue lips and pale face, I believe in immediate intubation. Delay may be disastrous, as I have found in a few of my cases. If I had operated upon Case 15 immediately, instead of waiting half an hour, I believe the fatal collapse would not have occurred.

Method of Operating.—O'Dwyer's Method.—The child should have a blanket wrapped completely and securely round it, and pinned closely about the neck, avoiding having a mass under the chin, which might interfere with the depression of the handle of introducer. Thus movements of the child are prevented. A nurse should sit in a chair upright, with the child on her lap, both facing the operator. The nurse should grasp the child's elbows firmly and grasp the child's legs between her knees. Another nurse should stand behind the chair, grasp the child's head firmly between her hands, and the physician inserts the gag and opens the mouth widely, and the nurse who holds the head now includes the gag in her grasp. It is very important that the most experienced and reliable nurse should hold the head and gag, and this should be done by another medical man if one is present. The child's head is inclined slightly backwards, and rests on the shoulders of the nurse. The gag being securely in place the introducer, with the appropriate tube attached and threaded, is grasped in the right hand, while the left index finger, armed with a knuckle stall, is inserted into the mouth, hooks up the epiglottis, then is carried to one side. The tube is inserted into the mouth horizontally, the handle being depressed, the tip of the tube being carried along the margin of the left index finger, and the handle gradually raised until the tube engages in the glottis. Then the handle is raised to the horizontal and the tube gently pushed home till the head rests on the cords and the introducer lies on the tongue. Then press on the head of the tube with the index finger and relax the string, and if you have a trigger use it, then withdraw the obturator and be sure and keep the introducer in the middle line all the time, gradually depressing the handle. The fact that the tube is in place may be recognised by the rattling in the tube and characteristic cough that immediately follows. This should be confirmed by carrying the index finger behind the tube and feeling the posterior wall of the larynx. The gag should be withdrawn and the child allowed to breathe for a few minutes. If the obstruction is completely relieved the gag is reinserted and the thread withdrawn. If, however, loose pieces of membrane block the tube it can be withdrawn by the thread. If you fail to hook up the epiglottis or get the tube in the larynx at the first effort, withdraw the finger, and after a short interval reinsert it. Do not make prolonged efforts.

Extubation.—Place the child in the same position as for

Intubation, only have the head straight up instead of inclined backwards. Hook up the epiglottis with the left index finger, and rest the tip of the finger on the posterior tip of the tube-head. Carry the point of the extractor to the end of the finger on its under surface, then raise the handle to the horizontal, keeping in the median line and using the pulp of the finger as a fulcrum, the point will glide forwards and enter the lumen of the tube, the blades are diverged and the tube withdrawn.

The period at which extubation should be done varies with the stage of the disease and the age of the patient. As a general rule four days suffice to leave the tube in, though re-intubation is often necessary.

It is very advantageous for beginners to acquire dexterity on the cadaver, and for this purpose the body should be propped up somewhat as in the patient. When critical exploration of the larynx is attempted for the first time one feels somewhat the same as at one's first vaginal examination, and it is not easy to be sure when you have got the epiglottis and to define the aryepiglottic folds. But a little practice suffices to make these landmarks easily discernible and enables one to acquire a fair dexterity with the operation, though frequent repetition increases considerably that dexterity, which is more valuable for this than for most operations.

The Author's Method.—For reasons which will be explained later I dislike the upright position, and have introduced and practised with satisfaction the following modification of O'Dwyer's original method. I have had a table constructed (Fig. 2) consisting of a simple plank with shelving piece cut out for the neck, and another piece cut out so as not to interfere with the handle of the gag. At the head end there is jointed a piece of wood with a bevelled hole to fit the occiput. This by means of a brass quadrant or rachet can fix the head at any inclination to the axis of the body. I put this upon two stools two feet high. The patient is wrapped in a blanket which is pinned in front like a double-breasted coat, leaving the neck fully exposed, in case the trachea should require opening (see frontispiece). Also the arms are secured by a fold of blanket fastened by one pin so that if artificial respiration should become necessary the arms could be released at once. The

Fig. 2.

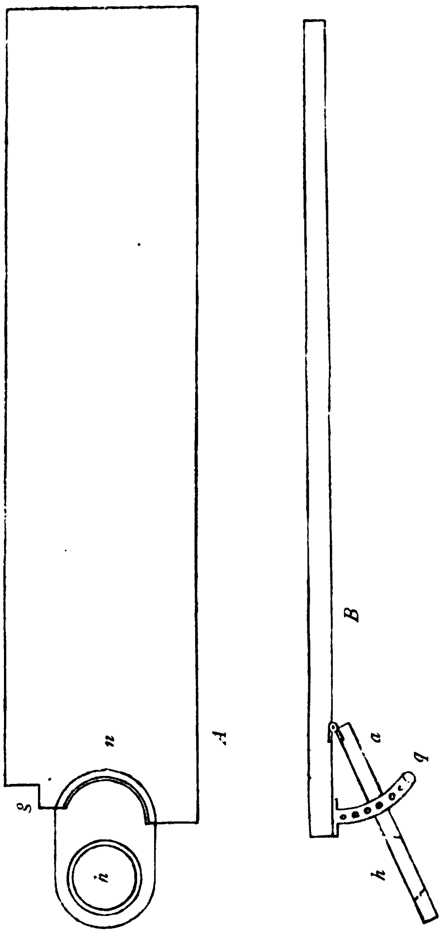


Fig. 2. The table used by the author. One-eighth size.

A Plan. *B* Elevation; *h* hole in jointed flap for reception of occiput; *n* piece cut out for neck; *g* ditto for handle of gag; *q* quadrant with pinholes to fix flap at any angle; *a* best angle for Intubation.

patient is placed on this table, with his head in the right position resting upon a padding of wadding, and a strap is placed firmly around his thighs. An assistant sits on a low chair beyond his head and holds the gag in the same way as for erect intubation. I bestride the patient, standing over the neck with the right foot on a low stool or box. Thus my right hand and arm are exactly in the patient's sagittal plane and at a convenient working distance. If necessary the patient's elbows or hands can be seized by another assistant, but it is not often needful, as patients irritable in the vertical position become quiescent in the horizontal.

For intubation one angle of inclination will be found better than others, and this can be adhered to accurately, in a way it cannot be in erect intubation. I have found the inclination indicated in Figure 2 (*B*, *a*) to be the best. For extubation the headpiece should be straight out, parallel to the table.

(To be continued.)

REPORTS OF CASES.

A CASE OF SUBSEROUS SARCOMA OF THE PERITONEUM.

BY O. J. KAUFFMANN, M.D.
PHYSICIAN TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

M. W., female, aged 4, was admitted to the Queen's Hospital in May, 1898. When brought to the out-patient room she looked a well-developed and fairly healthy little girl, and walked and moved actively and easily; the only appearance of disease was a marked flush on each cheek, with visible, dilated vessels in the central part of the flushed area, and a prominent abdomen.

The child was said by the mother to have been perfectly healthy until eight weeks before, when she had a sudden attack of vomiting without diarrhœa, but with abdominal pain and retraction of the belly. From this attack she gradually recovered, though the pain lasted a month, but since then she had gradually fallen off, losing appetite and flesh, but not becoming peevish or fretful. The mother further averred that the abdominal swelling, which was her main reason for bringing the child to hospital, had only appeared a fortnight ago, but had rapidly increased in that period. On examination the child presented an uniformly enlarged, semi-elastic abdomen, painless, greatly prominent, and with a flattened umbilicus, but without any bulging in the flanks. The measurement was 25 inches round the umbilicus. No thrill could be elicited, and the tenseness was too great to allow of the abdominal organs being satisfactorily palpated. The anterior part, in the recumbent posture, was resonant over a narrow oval area, except at its lowest level; the sides dull. All that could with certainty be felt was an irregular hardness situated in the right inguinal and lower part of the right lumbar region. The liver was moderately enlarged, but separate from the swelling just mentioned, the irregular upper border of which was at times plainly perceptible. The kidneys and spleen presented no palpable enlargement. No disease of the heart or lungs could be detected. The skin was fairly moist, and over the abdomen, where it was tense and shining, some enlarged superficial veins, conducting the blood upwards, could be seen.

The diagnosis of tubercular peritonitis seemed warranted by the abdominal condition as well as by the little patient's general appearance and habit of body. The mass in the right inguinal region was regarded as being one of caseous tuberculous glands, the main feature of the tuberculous affection being, however, considered as consisting in scattered miliary tubercles with much liquid exudate.

The progress was surprisingly rapid. In a very few days the patient became too weak to do more than turn in bed, and wasted visibly, while the abdominal swelling increased somewhat and became a serious impediment to respiration. Seven days after admission the abdomen was tapped, but only 13 ounces of a very turbid, reddish fluid escaped. Its specific gravity was 1015; it was rich in albumen, blood cells, and leucocytes, and contained a small quantity of urea. No further attempt at paracentesis was made, as the patient's end was evidently quickly approaching.

For the remaining days of life the child remained as she had been before, quiet, without pain, and even without tenderness on examination. Breathing became a little more distressed, and great œdema of the right leg and thigh supervened. She continued to take fluid food readily, but at the same time wasted most rapidly, and died 15 days after admission.

Post mortem examination.—The peritoneum was widely affected by a diffuse growth of tumour. There were no adhesions of any kind between the several organs and no signs of recent peritonitis. The large intestine, more particularly the cæcum and ascending and transverse colon, was enormously enlarged, their proportions being equally increased and the outlines of the parts preserved, with the exception of some prominent nodular masses springing from the ascending colon, which had been felt during life in the right side of the abdomen. The vermiform appendix was greatly enlarged and thickened; the appendices epiploicæ showed a similar uniform increase of their proportions, and were in many instances flattened by mutual pressure. The small intestine was throughout its whole length uniformly thickened and presented no excrescences. Here and there, however, on its peritoneal surface, which was of a dull yellowish-white colour, there were some small flat outgrowths of a whiter tint, marked in some instances with punctiform hæmorrhages. The mesentery was much thickened, and somewhat shortened; of a tough leathery feel; and the mesenteric glands were moderately prominent. The omentum was converted into an irregularly ragged, thickened apron. Further examination of the intestines showed the disease to be confined entirely within the thickness of their walls; the mucosa everywhere appeared healthy and in no part was the lumen seriously narrowed. The walls of the cæcum were in places 1½ inch thick, and those of the transverse colon measured only a little less. The stomach-walls showed a similar though slighter increase along the lower border only of the organ. Both ovaries were converted into tumours measuring six inches round their longer diameter and showing no trace of ovarian structure. The body of the uterus was healthy, but invested with much thickened peritoneum, as were the Fallopian tubes The spleen and liver were both of normal size and showed no invasion by the growth, which was however carried right up to their hila by the peritoneal folds and ligaments, and there stopped abruptly.

The appearance of the peritoneum was throughout opaque yellowish-white and equally so on the visceral and parietal portions. From the latter the diaphragm and recti abdominis were invaded to a great degree by extension of the tumour. The only metastatic growths were found in the two kidneys and the right parietal pleura. The former organs were but little enlarged and had preserved their outlines perfectly, but were thickly studded with pearl-white growths about a quarter of an inch in diameter. In the pleura there was a colony of small flattened secondary tumours.

The neoplasm proved to be a small round-celled sarcoma. The general colour on section was white, but here and there pink areas of vascularity were visible, and small hæmorrhages were abundant. The very even diffusion and the general preservation of the serous surface of the peritoneum, together with the absence of all inflammatory signs, showed the growth to be essentially subserous in origin. This was borne out by microscopic examination of the least-affected part of the small intestine where the densest mass of round cells was subserous; the muscular and submucous layers were invaded and their elements still recognisable in considerable amount, were separated by round tumour-cells.

It was impossible to determine any one point as the primary growth, and it seems probable that the tumour sprang simultaneously from many widely disposed elements in the subserosa rather than that it commenced at a single spot. On the latter supposition it would be difficult to explain the absolutely general and very uniform diffusion under the peritoneal surface.

REVIEWS.

A TREATISE ON APHASIA AND OTHER SPEECH DEFECTS.*

The delivery in 1897 of the Lumleian Lectures, "On some Problems in connection with Aphasia and other Speech Defects," gave Dr. Bastian an opportunity of expounding his views on the nature and causation of many obscure forms of aphasia. The book before us, however, is not a mere republication of these lectures, although they are included in it. Dr. Bastian has rightly decided to deal with the whole question of aphasia, and the result is a book which is at least one of the most important of the existing works on that subject.

We cannot attempt in this review to enter into any discussion of Dr. Bastian's views, though they afford ample ground for thought, and are at variance in many particulars—even in many elementary particulars—with those held by other writers of authority. We can but express our own opinion that they afford the most rational and consistent explanation of these very difficult phenomena that has yet been propounded. It will probably be familiar to most that Dr. Bastian denies entirely the motor functions of the so-called "motor centres" of the cortex, and regards these as "kinæsthetic" in nature—

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* A Treatise on Aphasia and Other Speech Defects. By H. Charlton Bastian, M.A., M.D. Lond., F.R.S., Fellow of the Royal College of Physicians of London, Emeritus Professor of the Principles and Practice of Medicine, and of Clinical Medicine in University College, London, &c. London: H. K. Lewis. 1898.

that is, as registering, and on occasion recalling, the memory of motor acts. Such a revival in a kinæsthetic centre is, according to the author, a necessary preliminary to the repetition of any previously performed motor act by the lower and true motor centres in the bulb. But Dr. Bastian believes that a kinæsthetic centre is never capable in itself of originating an act, but needs first, in all cases, to receive an impulse from an appropriate centre. Hence the ordinary process of speech involves the preliminary action of two cortical centres before the true motor mechanism can be set in action, namely, the auditory word centre in the temporo-sphenoidal lobe, in which the sound of the words is mentally revived, and the "glosso-kinæsthetic" centre in Broca's convolution, in which this revival is translated into a memory of the motor processes involved in their articulation. Moreover, Dr. Bastian supplies a similar explanation of the process of writing, and insists upon the existence of a "cheiro-kinæsthetic" word centre, whose interposition is as necessary between the visual word centre in the angular gyrus and the motor (lower) centres of the hand, as is that of the "glosso-kinæsthetic" centre in the process of articulate speech.

The above contains but the merest outline of the theory on which the whole discussion of the subject is based, but it will be at once evident that it involves a complete and radical alteration in the explanations usually adopted for the phenomena of speech and other allied processes. The problems of the subject are all worked out on this basis, and, although Dr. Bastian meets with difficulties in many places in bringing his ideas into line with recorded cases, yet on the whole he has succeeded in doing so to a very great extent. The book needs a most careful study, and well repays the very considerable outlay of time which is required even for a superficial grasp of the problems dealt with.

MASTERS OF MEDICINE.
WILLIAM STOKES, HIS LIFE AND WORK.*

Sir William Stokes' life of his father forms, we think, the best and the most interesting of this excellent series of biographies. This result is to no small extent due to the skill and good taste with which the book has been written; but it is even more to be attributed, as the author would be the first to admit, to the fine character of the man whose life it portrays. Dr. William Stokes was truly one of the Masters of Medicine, and no modern physician has a greater right to a place in the series so named.

Apart from his skill in the practice of his profession, the claims of Dr. Stokes to occupy an honoured place in the ranks of distinguished medical men are numerous and varied. As an original thinker and writer he did great work for the science of medicine, and his two books on the Diagnosis and Treatment of Diseases of the Chest, and the Diseases of the Heart and the Aorta, are monuments of scientific observation and thought Second only in importance to his original work must be placed that done as a teacher in the Dublin Medical School, for Dr. Stokes was a great teacher, and did much by his influence to raise the standard of medical education, and moreover to obtain a recognition for the School which it had never previously received at the hands of the University. Nor in this connection must we omit to mention the part he took in the foundation of the Pathological Society of Dublin, and the Dublin Sanitary Association, whilst it was largely due to his efforts that the University established the Diploma in State Medicine. Lastly, Dr. Stokes took the greatest interest in all questions of medical politics, and was appointed the Crown Representative for Ireland in the General Medical Council on its institution in 1858.

Of Dr. Stokes' personal character his son has succeeded in giving a very fine impression, and this without any elaborate analysis or even any very definite sketch. The record of his work—to the philanthropic side of which we have not alluded, although one of its most characteristic features—and the reverence and affection with which he was almost universally regarded by those who knew him, have very wisely been left to speak for themselves.

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* Masters of Medicine. William Stokes, His Life and Work. By his son, William Stokes, Surgeon-in-Ordinary to the Queen in Ireland. London: T. Fisher Unwin. 1898.

RINGWORM.*

THIS is an extremely good book on Ringworm. It is well-written, free from tautology, and lucid throughout. In the chapters on etiology, Sabouraud's doctrine, the research of other writers, and finally the author's own observations are reviewed and compared. The pathology and clinical varieties of the disease are then discussed, followed by important chapters on the treatment and prophylaxis.

Dr. Morris proves that some of Sabouraud's statements are not correct so far as Ringworm in England is concerned. For example, he shows that Kerion can be, and is caused by the small-spore fungus; and the beautiful micro-photographs taken by Mr. Andrew Pringle, published at the end of the book, place this beyond argument. We may point out that this view is also held by such authorities as Adamson and Colcott Fox.

The author's statement, "The continued prevalence of Ringworm is a standing reproach to the medical profession, and in a lesser degree to the authorities of schools," is undoubtedly a true one, and he is quite right when he says that the disease could be stamped out if isolation of cases could be carried out completely throughout the country. There is no reason why it should not be done on the lines he advocates in the chapter on prophylaxis.

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* Ringworm, in the Light of Recent Research. By Malcolm Morris. London: Cassell and Co. 1898.

THE YEAR-BOOK OF TREATMENT FOR 1898.*

MESSRS. CASSELL send us their Year-Book of Treatment for 1898, which maintains the standard of excellence set up by the previous volumes. The account given of advances made in the treatment of disease during the past year does not aim at the completeness which is characteristic of the larger publications of the sort, but rather at presenting in a space commensurate with the spare time of the busy practitioner an epitome of all that is most valuable in the year's therapeutic work. This object has been well carried out by the various contributors; and although it would be a very easy matter to point out omissions which to us appear of some importance, we can fully admit that on the whole substantial justice has been done. Some very valuable therapeutic suggestions are to be obtained from reading the book.

AN EPITOME OF THE HISTORY OF MEDICINE.†

THIS volume is the outcome of a series of lectures delivered by the author in the medical department of the University of Buffalo. Dr. Park considers that the history of medicine has been sadly neglected in medical schools, and he has published this book in order "to bring the most important facts and events comprised within such history into the compass of medical curriculum, and, at the same time, to rehearse them in such manner that the book may be useful and acceptable to the interested layman—*i.e.*, to popularize the subject."

The scheme of the book is founded on that of Renouard, which divides the past, medically speaking, into (*a*) the age of foundation, from the mythical period to the death of Galen; (*b*) the age of transition, ending with the revival of letters,

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* The Year-Book of Treatment for 1898. A Critical Review for Practitioners of Medicine and Surgery. London, Paris and Melbourne: Cassell and Company, Limited

† An Epitome of the History of Medicine. By Roswell Park, A.M., M.D. Philadelphia: The F. A. Davis Co. Publishers. 1897.

A.D. 1400; and (*c*) the age of renovation, from the fifteenth to the nineteenth centuries.

We have much enjoyed reading this book. It is well written and full of interest. Many of the illustrations are taken from antiquated medical works, and are especially curious when viewed in the light of modern knowledge. We note that the author puts forward arguments to prove that the Columbus was not responsible for the introduction of syphilis from America into Europe, and also that he is especially severe on Paracelsus, whom he dubs that "colossal figure" of "mediæval charlatans and knaves." The chapters on the Arabic Age and the Review of the Position of Medicine in the Seventeenth Century are especially worthy of notice.

THE EXTRA PHARMACOPŒIA.*

THE revision of the British Pharmacopœia has necessitated the publication of a new edition of Messrs. Martindale and Westcott's well-known book. Although the official Pharmacopœia is in theory supposed to contain all the remedies of any claim to an established reputation, yet we are bound to admit that there are a large number of drugs which find no record in its pages, but which all the same are regarded by many as being of material therapeutic value. We gather from the preface that the authors of the Extra Pharmacopœia are of opinion that a more generous selection might have been made in the official book: this is, however, of but little consequence whilst so excellent a supplement is supplied. The Extra Pharmacopœia has become a necessary part of every medical library, and the ninth edition will prove in no way inferior to its predecessors.

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* The Extra Pharmacopœia. Revised in Accordance with the British Pharmacopœia, 1898. By William Martindale, F.L.S., F.C.S., Member of Council of the Pharmaceutical Society, and late Examiner. Serotherapy, Organotherapy, Medical References, and a Therapeutical Index, by W. Wynn Westcott, M.B. Lond., H.M.'s Coroner for North-east London. Ninth Edition. London: H. K. Lewis. 1898.

BRADSHAW'S DICTIONARY OF BATHING PLACES.*

We have to acknowledge the receipt of the 1898 edition of Bradshaw's Dictionary of Health Resorts. As far as we can judge the information given is very complete and accurate; and the publication will therefore be of value to members of the medical profession, who are often somewhat at a loss to obtain information with regard to the various places to which they may wish to send their patients. We recommend the book as a very useful one.

NOTES ON PHARMACY AND DISPENSING FOR NURSES.†

This small book describes in clear language the nature and use of the principal medical remedies, and also gives simple instructions for the dispensing and administration of medicines. We were not aware that dispensing formed a legitimate part of a nurse's duties; but if she be called upon to perform this office—which we think she never ought to be—a useful outline of the art will be found in these notes. The simple account of the remedies given does not go beyond what a nurse may fairly be expected to know.

YEAR-BOOK OF THE SCIENTIFIC AND LEARNED SOCIETIES OF GREAT BRITAIN AND IRELAND.‡

The fifteenth annual issue of Messrs. Charles Griffin and Company's Year-Book of the Scientific and Learned Societies of Great Britain and Ireland maintains the usual level of excellence reached by its predecessors. As before, the information supplied is thoroughly reliable, and a really surprising amount of detail is included. The book is unique of its kind.

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* Bradshaw's Dictionary of Bathing Places, Climatic Health Resorts, Mineral Waters, Sea Baths, and Hydropathic Establishments. London: Kegan Paul. Trench, Trübner and Co. Ltd. 1898.

† Notes on Pharmacy and Dispensing for Nurses. By C. J. S. Thompson. London: The Scientific Press Limited. 1898.

‡ Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Fifteenth Annual Issue. London: Charles Griffin and Company Limited. 1898.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

Messrs. BURROUGHS, WELLCOME, and Co. send us samples of two recent additions to their list of Tabloids. These contain two grains of oxide of zinc and five grains of sub-gallate of bismuth respectively, and should prove a useful form in which to administer the drugs.

New Books, etc., Received.

Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. HALE WHITE, M.D., F.R.C.P., Physician to and Lecturer on Pharmacy and Therapeutics at Guy's Hospital, &c. Third Edition. London: J. and A. Churchill. 1898.

Guide to the Clinical Examination and Treatment of Sick Children. By JOHN THOMPSON, M.D., F.R.C.P. Ed., Extra Physician to the Royal Hospital for Sick Children, and Lecturer on the Diseases of Children in the School of Medicine of the Royal Colleges, Edinburgh. Edinburgh: William F. Clay. 1898.

Masters of Medicine—Sir Benjamin Collins Brodie. By TIMOTHY HOLMES, M.A., F.R.C.S. London: T. Fisher Unwin. 1898.

La Tuberculose Infantile. Revue Bimestrielle, Numéro 3. 15 Juin, 1898.

Practical Organic Chemistry: the Detection and Properties of some of the more important Organic Compounds. By SAMUEL RIDEAL, D.Sc. Lond., F.I.C., F.C.S., sometime Lecturer on Chemistry at St. George's Hospital Medical School, and Examiner in Chemistry, Royal College of Physicians, &c. Second Edition. London: H. K. Lewis. 1898.

A Case of Bilateral Syphilitic Ulceration of the Palbebral Conjunctiva. A Case of Hypopyon Kerato-Iritis occurring in a Patient during an Attack of Typhoid Fever. By CLARENCE A. VEASEY, A.M., M.D., Adjunct Professor of Diseases of the Eye, Philadelphia Polyclinic.

New Forceps for Intestinal Anastomosis. By ERNEST LAPLACE, M.D., LL.D.

Contribution to the Study of the Mineral Waters of Pougues-les-Eaux (Saint-Leger Spring). By Dr. HERARD DE BESSE.

Atlas of Methods of Clinical Investigation, with an Epitome of Clinical Diagnosis and of Special Pathology and Treatment of Internal diseases. By Dr. CHRISTFRIED JAKOB, formerly First Assistant in the Medical Clinic at Erlangen. Authorised Translation from the German. Edited by AUGUSTUS A. ESHNER, M.D., Professor of Clinical Medicine in the Philadelphia Polyclinic. London: The Rebman Publishing Co. Limited. Philadelphia: W. B. Saunders. 1898.

A Text-Book of Diseases of Women. By **Charles B. Penrose**, M.D., Ph.D., Professor of Gynecology in the University of Pennsylvania. Second Edition. London: The Rebman Publishing Co. Limited. Philadelphia: W. B. Saunders. 1898.

Physiology, Experimental and Descriptive. By **Buel P. Colton**, Professor of Natural Science in the Illinois State Normal University. London: The Scientific Press Limited. 1898.

Friedberger and Fröhner's Veterinary Pathology. Translated and edited by **M. H. Hayes**, F.R.C.V.S. With Notes on Bacteriology, by Dr. G. **Newman**, D.P.H. Volume I. London: W. Thacker and Co. 1898.

Buxton: its Baths and Climate. By **Samuel Hyde**, M.D. Manchester: John Heywood. 1898.

Operative Gynæcology. By **Howard A. Kelly**, M.D., Professor of Gynæcology in the John Hopkins University. Vol. II. London: Henry Kimpton. 1898.

The Cerebellum. By **H. Davies**, M.D. London: Nichols and Co. 1898.

The Cure of Suppurative Otitis Media by Antiseptic Irrigation. By **F. Faulder White**, F.R.C.S. Eng., Surgeon to the Coventry and North Warwickshire Hospital.

Elements of Histology. By **E. Klein**, M.D, F.R.S., Lecturer on General Anatomy and Physiology, and **J. S. Edkins**, M.A., M.D., Joint Lecturer and Demonstrator of Physiology in the Medical School of St. Bartholomew's Hospital, London. Revised and Enlarged Edition. London, Paris, New York. and Melbourne: Cassell and Company Limited. 1898.

The Cure of Consumption. By **W. H. Daw**, M.R.C.S., L.R.C.P. Lond., late House Physician Royal Hospital for Diseases of the Chest. London: The Scientific Press Limited. 1898.

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THE

BIRMINGHAM MEDICAL REVIEW.

SEPTEMBER, 1898.

ORIGINAL COMMUNICATIONS.

INGLEBY LECTURES FOR 1898.

EXTRA-UTERINE PREGNANCY.

BY JOHN W. TAYLOR, F.R.C.S. ENG.

(*Continued from page 96.*)

LECTURE III.

ON THE DIAGNOSIS AND TREATMENT OF EXTRA-UTERINE PREGNANCY.

DIAGNOSIS.

Mr. Dean and Gentlemen—

When extra-uterine pregnancy is present and has by its symptoms driven the patient to seek for advice, at every stage—up to "term" with death of the fœtus—there are certain indications to be derived from history, symptoms, and physical signs, which are sufficient in most cases to establish a correct diagnosis. In my own series of 37 cases a correct diagnosis was formed in 27 cases. In one case (the first case) no diagnosis was made. In 3 cases the diagnosis was made of tubal disease only. In 2 cases the diagnosis was made of myoma. In 4 cases the diagnosis was made of ovarian cystoma. Three of these were instances of ovarian cyst complicated by the co-existence of tubal pregnancy, and in one of these an alternative diagnosis was recorded of ovarian cyst or tubal pregnancy. In only three of the cases was the diagnosis absolutely mistaken, and in two of these, and even in some of the cases of imperfect diagnosis, I think it may be said with perfect truth that the fault was my own, and that imperfect knowledge, carelessness, or some false suggestion at the outset was responsible for the blunder. The omissions or mistakes which I have just enumerated are necessarily confined to cases on which I have operated. I believe I know of two other cases in which I did not fully recognise the condition and therefore failed to do my duty. The one was a case of diffuse hæmorrhage—probably from early rupture of the tube. The patient was quite pulseless when I was called to her, and although there was some history of delayed menstruation I could not find on examination any pelvic tumour or physical sign pointing to a misplaced pregnancy. I did not know at that date that in some cases of very early rupture this may be entirely wanting. I was uncertain and the possible moment for action was lost. The other case was one of early tubo-ligamentary pregnancy. The patient was herself suspicious that something was not right about her pregnancy and asked my opinion. After careful bimanual examination I came to the conclusion that the pregnancy was intra-uterine and normal and reassured the patient. Some nine or ten months after this I found that the time for confinement had been passed without result and that one of my colleagues had operated on the patient, removing a dead fœtus from an intra-peritoneal sac which was exactly similar to those I have described as posterior-ligamentary or retro-peritoneal. It is worthy of notice that the only case of this kind which figures in my own series (No. 4) had been seen at an early stage of the pregnancy by the same colleague and had been considered by him to be intra-uterine and normal. There is probably some good reason for the occurrence of the same mistake in the practice of two surgeons, both of whom have had special experience of extra-uterine gestation. Again, my operation list does not of course contain any case in which I have diagnosed an extra-uterine pregnancy and found a different condition. Four of such mistakes I can remember.

One was a case of retroflexion of the gravid uterus with intraperitoneal adhesions. This occurred very early in my practice. Two were cases of double pyosalpinx wtth temporary cessation of the menses; the other case was one of malignant tumour of both ovaries. In this case also there was consequent amenorrhœa. Other cases in which an alternative diagnosis was made or in which the possibility of extra-uterine pregnancy was entertained will be referred to under "differential diagnosis." Finally, I have to add to my list of successful diagnoses some six additional cases of extra-uterine pregnancy in which the operation was performed by another surgeon. In one of these cases a tubal pregnancy of one side was complicated by a pyosalpinx of the opposite side, the only instance in my own practice in which I have found tubal pregnancy and suppurative salpingitis directly associated. As subsidiary material helping to form my experience I have also to add nearly 50 cases of extra-uterine pregnancy which I have watched during the last fourteen years in the practice of my colleagues.

In considering both the diagnosis and the treatment of extra-uterine pregnancy I shall follow as nearly as possible the divisions already framed when dealing with its pathological history. Our first consideration, accordingly, will be the diagnosis of a case of earliest rupture of the tube with diffuse hæmorrhage. The patient is probably a married woman and one who of course must necessarily be within the limits of the child-bearing period. She has probably been in perfect health until an hour or so ago. She was then suddenly seized with a pain in the abdomen, "as if something had given way inside her." She became faint and collapsed, was sick and lay down on the couch or was assisted to her bed. She was given a little stimulant and for a few minutes felt perhaps slightly better. On reflection the attack did not altogether surprise her. Her proper menstrual period was due last week, but instead of coming on as usual was delayed for some days (an uncommon occurrence for her), and during the last three or four days, although there has been some discharge of blood from the vagina, which for an hour this morning was quite profuse, the period has not come on "properly" or in a customary manner. Such, or something like it, is the history. On glancing at the patient the observant practitioner will probably notice at once the paleness of her countenance and lips and her seriously "passive" expression. This can only arise from simple faintness with but little or no loss of blood or from active hæmorrhage. The pulse will decide it. If from simple faintness, although it may be temporarily lost or difficult to find, the pulse when felt again will be found to be slow and moderately full, while if hæmorrhage be still in progress the pulse increases in frequency as the hæmorrhage proceeds and after a time becomes perceptibly weaker. Perhaps the normal pulse rate is known, and if so it will be found that it is twenty or thirty or forty beats to the minute faster than is usual and that the ratio is still increasing. This is obviously not due to nervousness or excitement, for the patient is curiously self-contained and quiet. Every now and then the pulse becomes fluttering and difficult to count and at these times there is usually some nausea and vomiting. Between these periods of extra faintness it may temporarily improve in quality, but its rapidity does not diminish so long as the bleeding is unchecked. The temperature is sub-normal. If the hæmorrhage continue unabated a colder greyness slowly creeps over the countenance, the voice becomes feeble, the sight is dimmed, the fingers become white and rather cold, and the patient now speaks but little or only in answer to direct questions. Still, however, the mind remains clear and the patient is often acutely observant of all that passes around her. I have known a patient in this condition, rescued from imminent death by operation, speak afterwards of several things connected with her operation of which at the time it was thought she was practically unconscious. It is needless to try to trace the symptoms any farther—the patient is dying—and if anything is to be done to save her life it must be done at once.

In some of the worst cases (the symptoms of which I have been attempting to describe) there are no pelvic or abdominal signs of any definite importance or certainty. The hæmorrhage may come from a very little swelling near the cornu of the uterus and if the latter be inclined to retrovert the tubal swelling may be inaccessible. The blood is fluid; it is continually pouring or dribbling into the abdomen and the patient never has vitality enough for any kind of inflammatory reaction. In addition, the patient may be stout, the abdominal parietes thick, and a satisfactory bimanual examination be altogether impossible. Then without any sign directly pointing to the tube the symptoms of internal bleeding must be our ground for action. Fortunately, however, in the majority of cases, there is additional, and sometimes abundant evidence to be obtained by careful examination. Sometimes a tumour is to be distinctly felt at one side of the uterus—sometimes a "decidua" has been passed *per vaginam;* usually the pouch of Douglas may be felt distended by blood-clot, the sensation of an ill-defined but full and boggy swelling being communicated to the finger of the examiner. In one case I detected absolute fluctuation of the blood through the abdominal walls before opening the abdomen, and other indications of blood in the abdomen may be elicited by percussion—dulness in the flanks very slowly changing with changes of position (Mayo Robson)—while in all cases which survive the first few hours, and in which the bleeding is temporarily checked, there si difficulty in the passage of flatus and motion—the patient suffers from considerable abdominal pain and, in short, the signs are present of peritonitis as well as those of recent hæmorrhage. In these cases it is but very rarely (if ever) that any evidence pointing to pregnancy is to be obtained from the condition of the breasts or areolæ or from the sensations of the patient. These are always feeble and more often wanting in the early stages of extra-uterine pregnancy, and any search for them with reliance on their importance will probably increase doubt at a time when certainty and action are of the utmost value.

Now as to differential diagnosis: in a case of early rupture with diffuse hæmorrhage the symptoms are so notably sudden and instant in their origin that there is but small danger of any other affection being suspected save those of similar acuteness. To one unversed in gynæcological disease the idea of poisoning is apt to come uppermost. Gastric or intestinal perforation from ulcer of the stomach or acute appendicitis may also be suspected. In all of these there may be the same sudden onset, but except as a curious and improbable coincidence there would not be the contemporaneous presence of an irregular blood-discharge from the vagina, and the history, however poor, of some delay in the appearance of the period. In all of these, too, the immediate pain and distress are much more violent than in hæmorrhage, while in gastric perforation (which usually occurs in young unmarried women) and in acute appendicitis there are antecedent symptoms or attacks which point to the stomach or the appendix as the source of trouble. As a matter of fact the question of these diseases has occurred to those concerned rather as *post-mortem* doubts and fancies after the patient has died than as serious diagnostic difficulties during life. The chief danger of the practitioner in my own experience has been to underestimate the importance of the condition before him. The medical attendant has been unaffectedly surprised at the consultant's diagnosis, and in one case he was evidently incredulous until the blood was pouring out of the opened abdomen. It has been the difficulty of making any diagnosis at all rather than the making of a wrong one which has usually been the stumbling-block, and in two of my cases a physician was the first consultant who was sent for. In both of these cases I am happy to say the condition was recognised by the physician, and the surgical interference recorded was the result of his diagnosis.

Our next consideration is the diagnosis of an unruptured tubal pregnancy—of tubal mole and of peri-tubal hæmatocele. In the preceding section, when dealing with early rupture and diffuse hæmorrhage, we found that of the three chief factors which go to form the diagnosis, the symptoms—symptoms of internal abdominal bleeding—were on the whole the most reliable, that the history was of next importance, and that the physical signs of any tumour (although of the utmost value when present) were uncertain and might be practically wanting. As we proceed with our subject and discuss later and still later developments of extra-uterine pregnancy we shall find both history and physical signs increasing in value, and it is to these, therefore, that we shall mainly direct our attention; but at all the stages referred to (except the very latest) diffuse internal hæmorrhage may intervene and add its special signs and symptoms to those already present.

The previous history of the patient—the history before the pregnancy begins—is of some importance. There is a certain amount of well-being of the genital organs which is probably necessary for conception to take place, and in any case of pregnancy, whether uterine or extra-uterine, the patient has usually been moderately well and free from any marked pelvic trouble immediately before the act of impregnation. This period of ante-pregnant or ante-amenorrhœal well-being, which is of little or no importance in normal pregnancy, is worthy of special attention when there is a possibility of misplaced pregnancy, because the tumours with which this is liable to be confounded have usually some history of illness rather than of health immediately preceding their formation. Again, in rather more than half the number of cases of extra-uterine pregnancy several years have elapsed since the last normal pregnancy took place, and although the absence of this interval is of no diagnostic significance (as the accompanying tables will show), its presence in a suspicious case may be held as slightly increasing that suspicion, and as being in accordance with the history of other recorded cases.

From the consideration of these two points we pass on to the history of the pregnancy itself. It is obvious that as the duration of the pregnancy increases so must its history be traceable for longer and still longer measures of time, and the chief sign which marks this is the absence of the normal menstrual period —not necessarily the absence of all sanguinolent discharge, but the absence of the normal period in its usual course. Some critical discrimination is often needed in order to arrive at a just conclusion on this point. For instance, in tubal mole (as I pointed out in 1894), there is often no definite history of amenorrhœa—that is, the patient has never gone "over her time" without vaginal loss, and if carelessly questioned, such a patient will probably answer that she has been "regular" throughout, but that the present period is unusually protracted. On closer inquiry (of the same patient) we may, however, probably elicit the fact that the hæmorrhage which has been taking place during the last three or four weeks is very different in character from that of a normal menstrual period, and the patient has no difficulty in fixing a date some seven or eight weeks previously when she was last "properly poorly." Dr. Cullingworth has recently drawn attention to the characters of the hæmorrhage observed in this condition. He writes: "The blood is almost invariably dark in colour, moderate in amount, thickish in its consistence, and steady in its rate of flow. Gushes of bright red blood occur occasionally, but are quite exceptional." If we add to this that the hæmorrhage is very persistent, and that it may carry with it some shreds or portions of decidual membrane, all its special features have been noticed. Apart from the presence of decidua the most practical point, in my opinion, is the contrast often afforded by this bleeding to the normal bleeding of the menstrual period in the same individual. The type of menstruation often varies but little for years together, and it is very rare that an intelligent patient is unable to detect the difference. Amenorrhœa, then, together with or followed by persistent, dark-coloured uterine bleeding of moderate amount, is almost always met with. The hæmorrhage is usually due to some separation of decidual membrane from the interior of the uterus, and is, moreover, a sign that the vitality of the pregnancy is endangered or destroyed. So long as the pregnancy—although out of place—is growing and uninjured there is, as a rule, no uterine bleeding. If the decidua be shed it does not follow that the bleeding ceases. Hæmorrhage continues from the interior of the uterus, while the abortive pregnancy remains as a source of irritation within the tube, and in some cases at least I have very little doubt that the hæmorrhage comes directly from the tube—the tube containing the mole of pregnancy—bleeding alike into the uterus by its open uterine end and into the pelvis by its open fimbriated end.

We now pass to the physical signs elicited by examination of the patient. When dealing with the pathological history of tubal pregnancy I noticed that one of the earliest and most marked phenomena attending its presence was the increased vascularity of the parts affected. There is a sign, a very constant and valuable one, accompanying this—the presence of pulsating vessels in the vaginal vault on the affected side. All the branches of the uterine artery are subject to very marked enlargement on the side of the pregnancy. It is often easy to touch a vessel the "pulse" of which is very comparable to that of the radial, and, although inflammatory affections may sometimes give rise to very similar hyperæmia, the pulsation of the vessels is rarely so marked and so easy to elicit as in tubal pregnancy.

The next point is the finding of the extra-uterine tumour. If we turn to the sequence of illustrations which I used when describing tubal mole and peri-tubal hæmatocele,* we shall at once recognise the leading features to be determined (if possible) by vaginal and bimanual examination. There is the tubal tumour caused by the misplaced pregnancy, its size, shape, position, and mobility, and there is the displacement (if any) of the pelvic viscera caused by its growth. When hæmatocele forms there may be the opportunity perhaps of following the alteration in the tumour produced by hæmorrhage—in watching the change from mobility to fixation, the rapid lateral and upward growth of the blood-mass, and the change from the insensitive little tubal tumour of the healthy and unruptured pregnancy to the acutely tender and extending hæmatocele. For at first, when the pregnancy forms within the tube, there is no pain or tenderness, and it is only by accidental good fortune that the opportunity arises for an examination under these conditions. In one case seen by me at this stage the patient had nothing to complain of except amenorrhœa of five or six weeks' standing, but to one side and behind the uterus a little moveable tumour was plainly felt which, by its shape and its contiguity to the uterus, suggested a tubal rather than ovarian origin. Another observer describes the tumour under these conditions as "sharply limited from the unaltered part of the tube as closely corresponding to the size of the ovum, and as elastic but yielding." (Winter.)

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* Vide Figs. 8, 9, and 10.

Later, if bleeding occurs within the tube its enlargement is not limited to the site of pregnancy, but the whole of the tube becomes distended, and this is the stage when the diagnosis of the tumour is attended with least difficulty. The tube is not only distended but hard, its sinuous curves are easily followed, its tubal or "sausage-shaped" character is readily ascertained, and if the hæmorrhage be limited to the interior of the tube and no blood as yet has invaded the peritoneal cavity, there is still but little or no tenderness, and a full examination may be made without difficulty or pain. The following illustration (Fig. 36) will, perhaps, convey better than words can do what may be felt under such conditions by vaginal touch and bimanual examination. It also indicates the usual limitations to complete investigation. The uterus is inclined to retroflexion; its highest part

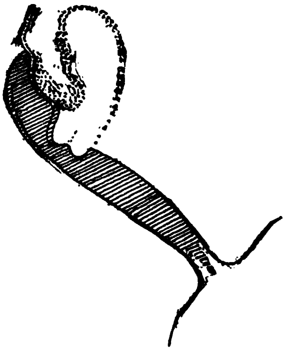

Fig. 36.

can, perhaps, be felt bimanually, but whether this be fundus or the upper portion of the anterior surface is probably uncertain. Behind the cervix a sausage-like tumour is plainly felt closely applied to the back of the uterus and probably adherent to it. In some cases it seems to partially encircle the uterus like a collar. One curve of it is thoroughly felt, and above this the beginning of another is just accessible. Beyond this point any further investigation by ordinary vaginal or bimanual examination may be impossible. Rectal examination will afford larger and higher opportunities, but this is inadvisable except in cases of serious doubt and difficulty when the patient remains under the personal observation of the surgeon.

While the foregoing is a fair description of the tumour very generally found in cases of extra-uterine pregnancy it by no means follows that the tumour, or any tumour, is always met with in this situation. Sometimes the pregnant tube is altogether on one side of the uterus, the pouch of Douglas being quite empty, and when the uterus is much retroflexed the tumour may even be found in the front half of the pelvis, the pregnancy lying altogether anterior to the uterus. In this situation the tumour is very accessible to the bimanual examination provided the bladder be empty. (The use of the catheter is always an important preliminary to a thorough examination of the pelvis.)

It might easily be supposed that, as hæmorrhage took place into the pelvis and the original distension of the tube was supplemented by the formation of a hæmatocele, so the resulting tumour would become increasingly prominent and more easy of diagnosis. But it is not so. With every bleeding into the peritoneal cavity there is pain, there is some collapse, and there is abdominal tenderness persisting for many days. The slightest pressure is objected to, the abdominal muscles are contracted, deep palpation is impossible, and any attempt at bimanual examination is apt to be most unsatisfactory. Furthermore, it will often be found on vaginal touch that the clearly-defined outlines of the tube are obscured or even lost in the swelling of the hæmatocele. There is evidently a tumour present, and it appears to be connected with the Fallopian tube, but its upper limit cannot be palpated from the abdomen, and its exact size and boundaries are uncertain. Here the displacement of the uterus, if definite and permanent, will afford valuable evidence as to the size of the swelling which causes the displacement. A little later, if the hæmorrhage is repeated and the hæmatocele increases, we find the upper limit of the swelling appearing above the pubes. In spite of the pain and abdominal distension there is then no difficulty in ascertaining the full extent of the tumour. Above one groin we usually find the convex outline of the mass arising from below. It is lateral, fixed, tender, and bulging, and may be conveniently represented in the usual way by the accompanying outline illustration (Fig. 37). The convex upper border of the mass is well marked. It is sometimes visible, it can be felt on gentle palpation, and tends to extend in an increasing curve towards the umbilicus. Below this line the percussion note is dull; above it the adherent and probably distended intestine marks a clearly defined area of resonance. This applies to the central portion of the curve; each end of it shades off into inaccessible regions—on the one side toward the loin of the affected side, on the other beneath the pubes. Examined bimanually the abdominal mass above the groin is felt to be one with the tubal tumour in the pelvis and the displacement of the uterus to the non-affected side (which is now

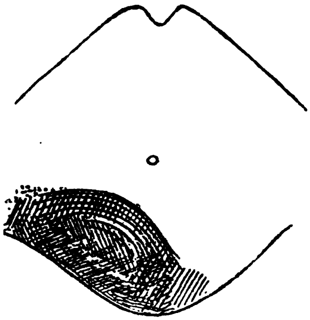

Fig. 37.

extreme) is marked and unmistakable. This tumour, which is usually characteristic of the advanced development of intraperitoneal hæmatocele, the result of bleeding from the unruptured tube, and which then is produced somewhat slowly or after repeated hæmorrhages, may also be more suddenly formed by later rupture of the tube; and, so far as physical signs are concerned, there is no essential difference in the resulting hæmatoceles. The same description will accordingly apply to both formations.

Very similar, too, is the tumour formed by an intra-ligamentary pregnancy about the fourth month when the pregnancy is of the anterior or sub-peritoneo-pelvic variety. There is no difference except that the uterus is liable to be raised as well as displaced to the opposite side by the growing pregnancy and that in this case one is more liable to meet with the signs of a fixed iliac tumour growing into the abdomen above the groin without any symptoms of internal hæmorrhage, because under these circumstances the pregnancy may be uninterrupted by accidental changes. Frequently, however, disturbances do arise and then no differential diagnosis between the two hæmatoceles is possible until the abdomen is opened.

The only other tumour needing consideration at this stage is that of the typical retro-uterine hæmatocele when the pouch of Douglas is acutely distended, its opening above into the peritoneal cavity being temporarily occluded. The condition occurs but rarely as the result of tubal bleeding (an example is afforded by Case 2), but when it does take place the signs—both abdominal and pelvic—are very different from those I have already described. In the (two) cases I have seen the upper limit of the blood-mass was readily felt from the abdomen, but instead of being lateral, convex, and bulging it simply formed a hard, irregular wall or line stretching right across the abdomen, midway between the pubes and the umbilicus, the abdomen below this line being uniformly hard and dull with coagulated blood (Fig. 38). The active, growing, bulging pole of the tumour in this hæmatocele was transferred (as it were) from the abdominal to the pelvic aspect. The abdomen was quiescent; the pouch of Douglas was acutely distended. With one finger in the vagina

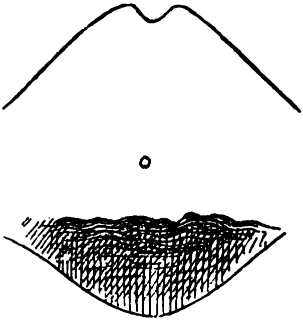

Fig. 38.

and the other in the rectum the tense elastic swelling of the over-filled pouch could be thoroughly appreciated, bulging between the two. The leading features of this hæmatocele are well represented in the following illustration. (Fig. 39.) The

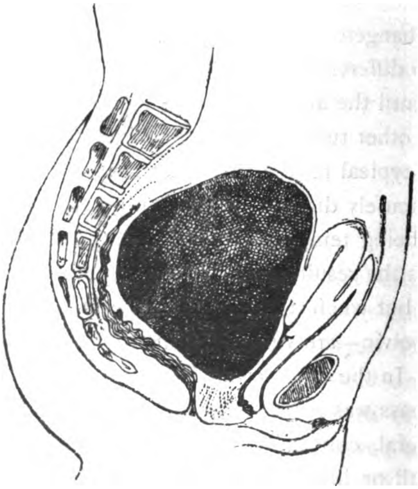

Fig. 39.

small intestines lie across and somewhat flatten the upper boundary of the blood mass, while the fold of peritoneum between the vagina and rectum is transformed into a large sac full of blood and serum.

The next point is the determination of the size, position, and contents (if any) of the uterus. The uterus is nearly always slightly enlarged, the enlargement bearing a strong resemblance to that of the sub-involuted uterus after confinement and having but little in common with the broad and succulent enlargement of the pregnant organ. It is slightly thicker and longer than normal, as a bleeding uterus generally is, but the cervix is not specially soft and yielding, and if this be followed up by the finger beyond the vaginal reflexion and the tumour of the extra uterine pregnancy or hæmatocele be encountered in its (close) relation to the uterus somewhere in the pelvis, the cervix may often be followed beyond and above the lower limit of the tumour and the uterus may be felt something like a finger fixed to one side of the tumour. (Figs. 40 and 41.) We have already traced the early tendency of the uterus towards retroflexion and its later displacement to one side of the pelvis. Generally with the larger hæmatoceles produced by recurrent bleedings, and always in true retro-uterine hæmatocele, which we have just been considering, the uterus is strongly displaced forwards. When the pouch of Douglas is excessively distended it may also be carried upwards so that the cervix is difficult to reach. The exact position of the fundus and the emptiness or non-pregnant state of its cavity are very important, and sometimes very difficult, points to determine, but they must be decisively settled

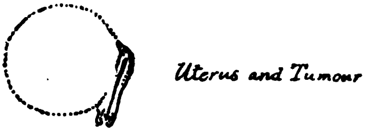

Fig. 40.
The tumour and the uterus in close relation.

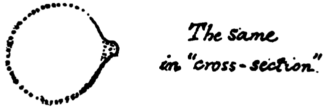

Fig. 41.
The tumour and the uterus in cross section.

before any operation is undertaken. On careful bimanual examination, if (as already described) the supra-vaginal cervix has been traced upwards by the examining finger from below, the direction of the uterus is followed as far as possible, and the probable situation of the fundus—toward the front or the side of the pelvis—is definitely determined. Then, if the hand on the outside of the abdomen be carried to this point the fingers of the outside hand may often be gently pressed down on the summit of the fundus in spite of the larger displacing tumour of the pregnancy, and the whole of the uterus may be accurately mapped out (bimanually) by the fingers. Sometimes the conditions—the co-existence of peritonitis and abdominal distension—make such examination an utter impossibility, and then it may not only be allowable, but necessary, to pass the uterine sound in order to come to a certain conclusion. Both the passage of the sound and rectal examination should, however, be left to the discretion and use of the operating surgeon. All other reasonable methods for determining the condition of the uterus should have been previously used, and the same delicate gauging of the probable position of the fundus and direction of its cavity as that already described should precede the final determination of the curve of the sound and of the passage of its tip within the external os.

We have now concluded the examination of the patient, but we have still to consider the symptoms which accompany intraperitoneal bleeding and hæmatocele. Some have been incidentally referred to, such as abdominal pain and tenderness, distension, and rigidity of the abdominal muscles. The characteristic feature of these symptoms, as also of the collapse and faintness and vomiting generally accompanying them, is that they come on suddenly because they are directly due to the bleeding, and if the bleeding be slight or moderate they rather quickly diminish in intensity or entirely disappear. For instance, a patient suffering in this way may feel perfectly well all day, be attacked with sudden violent pain at 11 p.m., feel seriously ill for half the night, have a good sleep towards morning, and be attending to her usual household duties in the course of the following day. These attacks, in the same way as the bleeding which we have studied before, are almost inevitably recurrent, so that in a large number of cases treated by operation we have a clear history of three or four attacks before the abdomen is opened. The suddenness of these attacks is very frequently surprising to the patient herself. One of my patients in whom they occurred during the daytime gave a history of a fall with each attack, evidently supposing that the pain from which she suffered was the consequence rather than the cause of the fall in each case. Some of the remarks of the patients are as follows:—"I was suddenly seized with pain on the left side of the belly, in the back, and in the thigh. I was bent double with it." "I was seized with sudden pain in the lower part of the stomach soon after getting out of bed." "I was seized with sudden pain three weeks ago on returning from church on Sunday, violent abdominal pain and vomiting being my chief symptoms. The pain was repeated on the following Thursday and Saturday and twice during last week." Vomiting very generally accompanies the attacks, but is not persistent. At first the patient usually speaks of the pain as being all over the abdomen, but when questioned can generally differentiate one side as being more painful than the other. If the bleeding increases, and always if the hæmatocele extends beyond the groin into the abdomen or really fills and distends the pouch of Douglas, the condition of the patient becomes permanently serious—she is confined to her bed with abdominal pain and tenderness. She is, as a rule, visibly anæmic from the loss of blood; there is either present or there is the clear history of some acute peritonitis following the last attack. The pulse is quick and feeble—probably 120 or more. There may be considerable pyrexia, the temperature rising to from 100° to 103° F., and in a certain proportion of cases there is slight but decided albuminuria. This last symptom appears in some way to be directly due to the blood effusion, for in the cases in which I have observed it it has promptly disappeared after operation. The pyrexia in intra-abdominal hæmatocele is probably due to reabsorption of blood, and need not be regarded as septic. When, however, the peritoneum has been lifted from the rectum or the pouch of Douglas is shut off from the rest of the peritoneal cavity, and this is acutely distended with blood, septic changes may occur and the pyrexia then is of a different character. The proximity of the rectum, the anterior coat of which is stretched and thin or the serous covering of which may be defective, favours the passage of septic matter from the bowel into the hæmatocele; decomposition of the blood slowly occurs, and the temperature may gradually rise to 104° or 105° F. The iliac hæmatocele or the pouch of Douglas becomes further distended by inflammatory effusion, and all the symptoms of septic absorption are present. Apart from this condition the chief value of the symptoms is as a measure of the importance and severity of the internal bleeding. The anæmia, the faintness, the collapse, the vomiting, the abdominal pain, and the peritonitis will vary in direct ratio to the bleeding. If such symptoms are produced slowly they point to tubal mole with increasing hæmorrhage from the unruptured tube. If, on the other hand, they are produced suddenly they point to later rupture of the tube.

With this we complete the consideration of all the elements which go to form a positive diagnosis of extra-uterine pregnancy before and during those disturbances to its progress which are so common in the earlier months—the disturbance of intraperitoneal bleeding and hæmatocele formation. Let us briefly recapitulate them. We have—

1. A patient within the child-bearing limits of age, and one in whom a pregnancy is possible.

2. She has recently been in good health.

3. It is more likely than not that several years have passed since her last pregnancy.

4. There is a history of some amenorrhœa accompanied or followed by—

5. Irregular uterine hæmorrhage, dark in colour, moderate in amount, and persistent in its course.

6. With this there may be the history of the passage of some membrane, either in one pouch or bag as a "complete decidua," or in two pieces, or in shreds.

7. On examination pulsating vessels may be felt in the vaginal vault on one side of the uterus.

8. On this side also, and closely investing the back of the uterus, there is nearly always a tubal tumour (exceptionally this may have a different or curious situation).

9. This tumour enlarges markedly and suddenly by recurrent hæmorrhages and by the formation of a hæmatocele directly continuous with the original tubal tumour.

10. These hæmorrhages are signalised by sudden spasms of severe abdominal pain and by transient attacks of peritonitis.

11. The uterus is displaced by the hæmatocele at first backwards, afterwards to the opposite side of the pelvis, and sometimes forward (against the pubes) (it is very rarely that the uterus is permanently displaced downwards); and

12. The uterus throughout, although slightly enlarged, may be proved to be empty.

The differential diagnosis still remains for us to consider. Extra-uterine pregnancy under the conditions I have been describing may be mistaken for:

1. Pyosalpinx, with amenorrhœa.
2. Myoma.
3. Simple abortion.
4. Retroflexion of the gravid uterus.
5. Anteflexion of the gravid uterus; and
6. Twisted pedicle tumours—(*a*) of the tube, and (*b*) of the ovary.

1. Pyosalpinx is usually accompanied by regular menstruation, menorrhagia, or metrorrhagia. Every now and then, however, in double pyosalpinx (when the ovaries have probably been rendered temporarily functionless by dense enveloping adhesions) there is total amenorrhœa of from two to three or

four months' standing, and then the symptoms and signs may be almost identical in the two conditions. The pyosalpinx will afford us a typical tubal tumour, and when both sides are affected the tube of the one side is nearly always very much more distended than that of the other, so that the main tumour is one-sided. The inflammatory thickenings and adhesions closely surrounding the tube may simulate a hæmatocele. A pinhole perforation of the distended tube may cause abdominal pain, collapse, vomiting, and a consequent attack of peritonitis, and in short there may be nothing but the history to guide us to a wise and correct diagnosis. Here the immediately preceding health or ill-health of the patient becomes a point of high importance. If the pyosalpinx be quite recent there will still be the history of purulent vaginal discharge preceding the pelvic inflammation, while if, as is more probable, the pyosalpinx be an acute recrudescence of an old affection, the patient may confess to some similar attack two, three, or four years previously, and to some tenderness or aching in one side during all these years.

2. The likeness to myoma is most marked when a tubal hæmatocele, not quite recent and hard from coagulation of the blood contained in it, is firmly fixed on one side of the uterus and is free from all other connexions. Then if the observer's mind be fixed on the condition of the uterus as a cause for continued uterine hæmorrhage, and if on bimanual examination he can thoroughly palpate a globular immovable "boss"—not specially tender—on one side of the fundus uteri, he may easily imagine the case to be a clear one of myoma. Case No. 37 may be taken as an example. Mrs. K. was sent to me as suffering from cancer of the uterus causing continued uterine hæmorrhage. The cervix was badly lacerated and diseased, but no certain sign of cancer could be detected. On further examination a hard tumour or out-growth was felt extending from the fundus. It moved with the uterus and had no other connexions. Here was the source of the bleeding. Yes; but not the source imagined. Instead of the

myoma too hastily diagnosed the tumour was a peri-tubal hæmatocele around an early tubal pregnancy. A more careful attention to the history would have prevented such an error and would generally direct the thoughts into a right channel when extra-uterine pregnancy is present. In the present instance there was a history of acute abdominal pain corresponding to the formation of the hæmatocele, and any attack of this kind is unknown or very unusual in myoma.

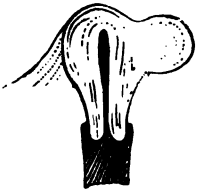

Fig. 42.

Diagrammatic representation of uterus and tumour as felt in Case 37.

3. An extra-uterine pregnancy which has resulted in tubal mole and hæmatocele may easily be regarded as a simple abortion by any one who depends entirely on symptoms, for these may be very similar in both affections, the peritonitic pains of the one being closely simulated by the painful uterine cramps of the other. On vaginal examination, however, the two conditions are at once differentiated or the "abortion" is shown to be no simple one by the presence of a tumour outside the uterus. When the conditions are unfavourable for full examination, or when there are any grounds for supposing that a tumour may be present but inaccessible, great caution is needed. The interference that would be right in incomplete abortion may be very harmful when the main source of irritation is outside the uterus. No. 36 is a case in point. Mrs. L. came to my out-patient room at the hospital with all the symptoms of an early abortion, and at her first visit I could find no trace of any tumour, the abdomen being rigid and the conditions generally unfavourable for full examination. The uterus was enlarged, the cervix was soft and open, and the hæmorrhage had been continuous for four weeks. Diagnosis was deferred.

Some few days afterwards the uterus was dilated by the physician in attendance at the patient's home. Nothing was found within it. Severe abdominal pain set in coincidently with the dilatation. I saw the patient again, recognised a tubal pregnancy on the right side of the uterus, admitted her into the hospital, and operated. The tube was ruptured, the placenta protruding. There were also recent inflammatory adhesions about the tube and uterus.

4. Retroflexion of the gravid uterus has been recognised by most authors as a condition needing careful differentiation from extra-uterine pregnancy, because unfortunate cases have been recorded in which a distended tube in Douglas's pouch has been supposed to be the pregnant retroverted fundus, and an injudicious attempt at its replacement (?) has ruptured the tubal sac and hastened the death of the patient. When one knows this and recognises the danger of any interference before a certain diagnosis is formed it will be found excessively rare or impossible for any similar mistake to recur. The position of the fundus must be ascertained by careful bimanual examination; its presence or its absence in front of the tumour must be satisfactorily determined. When there is any tumour other than the fundus filling the pouch of Douglas the whole of the uterus (generally quite straight) is pushed against the pubes; the cervix is looking directly downwards, and if the bladder be empty the fundus may be felt on gentle pressure immediately above the pubes. When the pregnant fundus is in the pouch of Douglas there is of course no fundus to be felt in front of the tumour. Bimanually the fingers of both hands may perhaps be so closely approximated above the pubes that the cervix may be felt to be continuous with the posterior tumour and absolutely free from any other connexion. Retention of urine is more common in retroflexion of the gravid uterus while a discharge of blood (unattended with labour pains) is more common in extra-uterine pregnancy.

5. Anteflexion of the gravid uterus, although but rarely recognised as a possible source of error, may occasionally be

quite as perplexing as the gravid retroflexion. Whether from an unusually high attachment of the impregnated ovum—quite at the fundus uteri—or from some other cause less easy to understand, a pregnant patient, usually a primipara, is sometimes found who suffers from severe pains during the early months of pregnancy and in whom the two or three months pregnant fundus forms a globular elastic tumour which appears to have little or no real continuity with the cervix (Fig. 43). The cervix remains thin, hard, undeveloped, pencil-like, and runs behind the tumour of the pregnancy as far as the finger can reach. Further, it is absolutely lengthened, so that it feels as if the whole of an infantile or ill-developed uterus was to be explored behind a sac of pregnancy. I have even known a sound passed to the top of the lengthened but undeveloped cervix under these conditions give almost or quite the normal uterine measurement, produce no abortion, and in this way afford to the practitioner who used it confirmation of his (mistaken) opinion that the pregnancy was outside the uterus. Again, the knowledge that such cases occur is the surest safeguard against error. Sometimes the round ligament can be felt on each side of the distended fundus, and if so it is certain that the tumour felt is the uterus itself. If serious doubt remains in spite of ordinary careful methods of examination (which should *not* include the passage of the sound) it may be a relief to remember that extra-uterine pregnancy as well as intra-uterine pregnancy in a misplaced uterus does not as a rule cause urgent danger or need immediate interference so long as there is no sign of uterine

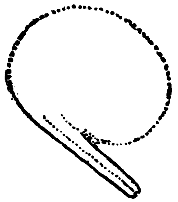

Fig. 43.

Diagram of anteflexed pregnant uterus with lengthened but undeveloped cervix.

discharge. If the patient be kept in bed she may remain under observation until the condition becomes clearer or until a more experienced opinion can be obtained.

6. Twisted pedicle tumours—(*a*) blood tumours of the tube from twisted pedicle, and (*b*) blood tumours of the ovary from twisted pedicle. Small tumours of the tube or ovary arising from or increased after twisting of the pedicle are very liable to be mistaken for misplaced pregnancies which have resulted in internal hæmorrhage. Not only are the signs and symptoms extremely similar, but the physical condition, the resulting hæmatoma or hæmatocele, may be almost alike in the two conditions. When accompanied, as they sometimes are, with menstrual irregularity the history also may favour the suspicion of a tubal pregnancy with hæmatocele. The sudden abdominal pain which characterises the final twist when the return circulation is obstructed, the vomiting and faintness which accompany this, and the rapid formation of a prominent and tender tumour, are all suggestive. The tumour itself, however, is not so intimately connected with the uterus as a tubal pregnancy would be. Whether formed by the tube or the ovary it has rather the character of an ovarian enlargement, and unless adherent to the uterus there is quite generally some unoccupied space to be discovered between the uterus and the tumour. The following cases are illustrative:—

Mrs. M., aged twenty-nine years, had been suckling her second child for six months when she was suddenly seized with severe abdominal pain on the left side. The pain continued. When examined some days later the following note was made: "A soft (cystic) elongated body, probably tubal, is felt behind the uterus." The patient had not menstruated since her confinement. The case was watched for a time and before operation the diagnosis was entered of adherent tumour of the left ovary and tube. Abdominal section showed a torsion blood-cyst of the left Fallopian tube.

Mrs. N., aged thirty-seven years, menstruated regularly until six weeks ago. On March 24th (five weeks after her last menstruation) she was suddenly seized with severe abdominal pain, fainting, and sickness. This occurred at night, and the pain has continued ever since. On examination a globular, tender tumour of about the size of a child's head was felt above the pubes on the right side. The uterus was displaced to the left by the tumour; it was of normal size and appeared to be empty. Although displaced by the tumour no direct connexion could be made out between the uterus and the tumour. The alternative diagnosis was made of right ovarian tumour with twisted pedicle or extra-uterine pregnancy in the right Fallopian tube with hæmatocele. Abdominal section showed a black adherent blood tumour of the right ovary with a three time twisted pedicle.

So far we have been considering the diagnosis of extra-uterine pregnancy as associated with various disturbing influences which usually destroy the life of the fœtus and seriously threaten or destroy that of the mother also.

In tubo-abdominal and in later tubo-ligamentary pregnancy both child and mother have escaped or "weathered" these early dangers, and if the child be living the diagnosis is much less complicated. In most cases there is but little doubt of the pregnancy and the diagnosis then mainly resolves itself into a differential one between intra- and extra-uterine pregnancy. When the child has been a long time dead, and the history of the pregnancy is no longer recent, the question of any pregnancy

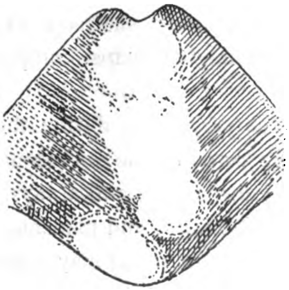

Fig. 44.
External configuration of abdomen in Case 3.

may be very doubtful, and the diagnosis again may become perplexing and obscure. When the child is living, the ordinary history, symptoms, and external signs of pregnancy are probably present. There is a history of amenorrhœa corresponding to the period of pregnancy with or without some history of transient pain and discharge about the time when the fœtus escaped beyond the limits of the tube. The patient herself has possibly passed through the troubles and sensations generally incidental to a normal pregnancy—the morning sickness, unusual cravings of appetite, and the period of quickening. The mammary signs, pigmentation of the areola and follicular development round the nipple (never very reliable), are more likely to be present than wanting. There is turgescence and bluish discolouration of the vulva and vagina. The mother is usually very conscious of the movements of the child and if she have experience of former (normal) pregnancies may perhaps complain of its unusual position.

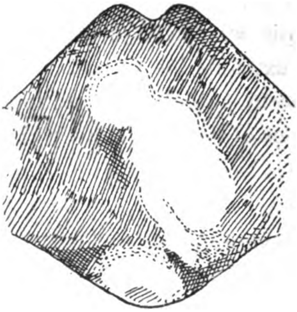

Fig. 45.

External configuration of abdomen in Case 33.

In tubo-abdominal pregnancy during the later months the fœtus is immediately recognisable on examining the abdomen, sometimes on simple inspection, and always on light palpation (Figs. 44 and 45). The fœtus and placenta are probably lateral or zigzag in position, but the fœtus may permit of passive movement into a more central situation. The ease and clearness with which its various parts can be palpated are quite remarkable; these may be felt to be lying immediately beneath the abdominal walls, and the mother may bitterly complain of pain from the fœtal movements. A limb can, perhaps, be taken hold of and the beating of the fœtal heart can be heard with unusual clearness. The parts of the pregnancy most liable to be mistaken for each other are the placenta and the head. The placenta being almost certainly attached to the tube should be lower in position. While the hands of the observer are examining the child there is no clear indication of any containing sac alternately expanding and contracting around the fœtus. On vaginal and bimanual examination the uterus may be found displaced to one side of the pelvis, only slightly enlarged and obviously distinct from the child. If this be so, the position of the child is certainly extra-uterine, and the apparent absence of any covering argues a tubo-abdominal pregnancy rather than a tubo ligamentary one.

Is the uterus definitely and decidedly distinct from the pregnancy? This is the all-important question, for nearly everything I have described as characterising the abdominal position of the child may be wonderfully simulated by a normal intra-uterine pregnancy when the walls of the uterus are unusually thin. This extraordinary thinness of the uterine walls occasionally encountered, with or without "hydramnios," or excess of the amniotic fluid, has been noticed by many observers. One of the first to remark it was Dr. Ingleby, in 1834. In its extreme condition it is very curious and needs to be seen in order to be thoroughly believed. The fundus uteri cannot be found apart from the pregnancy, and this should excite the strongest suspicion *against* an extra-uterine position for the child. If the independent existence of the uterus cannot be demonstrated, especial care and patience should be employed in watching, with the hand on the abdomen, for the slightest indication of a uterine contraction. If the loosely-lying limbs of the child do temporarily disappear and give place to the rounded arch, however feeble, of a containing sac, the presumption is in favour of an intra-uterine pregnancy.

In tubo-ligamentary pregnancy, before the child is sufficiently formed to be detected by palpation there may be an opportunity for diagnosing the condition, as in the two cases I mentioned at the beginning of this lecture. From the experience there described it would appear that in the posterior ligamentary variety the tumour of pregnancy may be so centrally situated and the uterus so united to it—probably so spread out on its anterior surface—that early pregnancy within the uterus is very closely simulated. Rectal examination might materially assist the examiner under such conditions, and will, I hope, prove of future service in the early detection of this variety. In the later stages of the tubo-ligamentary pregnancy when the child is living many of its features are very comparable to those described as existing in the abdominal variety, but are less marked. The tumour of the pregnancy is probably lateral or eccentric. Though contained in a sac the latter is very likely not of uniform thickness, and in some parts the child may seem to be very near the surface, and may be more easily palpated than when *in utero*. This especially applies to the anterior or sub-peritoneo-abdominal variety where part of the sac of pregnancy may be between the peritoneal reflexion and the skin. Abdominal *ballottement* of the fœtus is often very marked and the fœtal heart-beats are well heard. Sometimes the fœtal limbs are lying in the pouch of Douglas, and are then palpated with great facility (Winter). As the child has been originally formed below the placenta the latter will probably have a higher position than in tubo-abdominal pregnancy, and internal hæmorrhage from displacement (with faintness, blanching, and fatal collapse) may arise. The fœtal movements, active and passive (*ballottement*), and the auscultation of the fœtal heart and of the placental *souffle*, will testify to the fact of pregnancy, but dependence must be placed on careful vaginal and bimanual examination for the detection of its abnormality. The cervix is displaced and the rest of the uterus is pushed (generally) to one side and downwards below the sac of pregnancy.

The differential diagnosis at this stage consists in the separation of advanced abdominal and tubo-ligamentary pregnancy from—

1. Normal intra-uterine pregnancy.
2. Pregnancy in one half of a double uterus; and
3. Pregnancy in one horn of a bicornuate uterus.

1. In tubo-ligamentary pregnancies the uterus is in much closer relation to the pregnancy than in the tubo-abdominal form. It is often intimately incorporated with one side or aspect of the sac as it so often is in other intra-ligamentary tumours when these form. In spite, however, of this the solid thickness of its body traced upwards from below, the undeveloped state of the cervix, and the palpable emptiness of its cavity, all emphasised more strongly the nearer the pregnancy approaches to term, will hardly fail to guide the observer to a right conclusion. If the sound be used to confirm that opinion it must be remembered that the uterus is often greatly stretched by the growth of the pregnancy, but there will be no free movement of the sound within the cavity of the uterus. As already stated, regular contractions and relaxations of the sac are strongly suggestive of an intra-uterine position. Whether these ever occur in a ligamentary sac containing some muscular structure is doubtful. This is a point which requires further observation.

2. Pregnancy in one half of a double uterus is only perplexing to those who have no knowledge of the condition. The double cervix seen through a vaginal speculum will at once suggest the possible explanation of any abnormality and the non-pregnant uterus can be isolated from the pregnant one by passage of the sound.

3. Pregnancy in one horn of a bi-cornuate uterus is more difficult, especially if the non-pregnant horn be considered to be the body and fundus of the uterus. The condition (like the preceding) is a very rare one, but so also is an extra-uterine pregnancy to the ordinary accoucheur. If no serious symptoms are present and labour appears to be proceeding as usual, the child in one horn of a bi-cornuate uterus will probably be born without difficulty. In some of these cases, however, there is no

perfect communication between the pregnant horn and the cervix, and when this is the case the birth of the child is quite as impossible without operation as it is in true extra-uterine pregnancy.

In all extra-uterine pregnancies which go to term there is a more or less well-marked period of false labour and with this we have certain warnings, opportunities, and signs which should be of special interest to the accoucheur. The latter is usually sent for on the supposition that labour is beginning and it is of very great importance that this opportunity for diagnosis and advice should not be neglected. Whenever the cervix is found to be small and somewhat displaced and to have no proportionate relation to the history and symptoms of a full-term pregnancy the case should be thoroughly investigated and a full examination made. Especially care is necessary that the complaint of the patient be not lightly dismissed as simply a "false alarm." In extra-uterine pregnancy the "pains" are abdominal and are chiefly connected with the movements of the fœtus. They are probably accompanied by some vaginal discharge and sometimes by the expulsion of membrane. The pains last for several days, often preventing sleep. Finally they cease—cease suddenly—and the movements of the child are no longer felt. Soon after the breasts enlarge and temporarily fill with milk, but no encouragement being afforded to its flow, the draught soon ceases. All symptoms directly connected with the pregnancy (except the enlargement of the abdomen) permanently subside and the patient either enjoys a moderate amount of health and resumes her usual duties carrying her dead child with her, or septic changes occur within the sac, rigors and fever follow, and the patient drifts into a "typhoid" state from which nothing but the removal of the putrid contents of the sac can rescue her.

This brings us to the consideration of the second division of full-term extra-uterine pregnancy—viz., when the child is dead. In tubo-abdominal pregnancy the child is in all cases so easily distinguished that notwithstanding all movement is lost there is but little real difficulty in the diagnosis. The shape of the abdominal tumour, and especially the detection of the fœtal limbs through the abdominal parietes, combined with the evidence of an empty uterus, will in all cases establish the nature of the case. The differential diagnosis from intra-uterine pregnancy, which before "term" and when the child was living we found to be of first importance, is now (probably) no longer necessary and the diagnosis is correspondingly lightened. But in the tuboligamentary pregnancy, and especially in the posterior ligamentary form, the diagnosis is often rendered exceedingly obscure and difficult by the death of the fœtus, the more so when several months have elapsed since its life was ended. Menstruation may have been re-established and the patient does not necessarily volunteer the slightest information which would direct the mind towards the causation of the tumour. There is, of course, no fœtal heart-beat, no fœtal movement, no placental *souffle*, the patient's breasts have lost all indication of a pregnant state, and if septic disturbance has already taken place the patient may be in no condition to answer intelligently the questions of the examining surgeon. There is nothing but the large fixed abdominal tumour, the nature of which may be hidden by the thickness of its walls (Fig. 46). The suspicion of pregnancy, while the tumour was forming, if alluded to, is so common

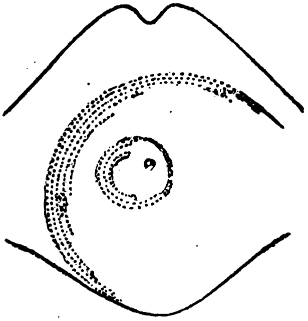

Fig. 46.

External configuration of the abdomen in Case 4. The inner circle near the umbilicus marks an area of less resistance within which it was possible to palpate the fœtus.

among all women with gradual abdominal enlargement that its significance is very easily unrecognised. No class of case may require more painstaking patience and perseverance in its investigation. Little by little, however, the history of the pregnancy may be gathered. The nine months' slow enlargement of the abdomen, the amenorrhœa, the fœtal movements (?), the spurious labour or something corresponding to it, the history of the breast-signs, all should be inquired after and their presence or absence noted. Sometimes, on deep palpation of the tumour, one may feel the resisting body of the fœtus after displacement of the fluid which surrounds it—a valuable sign, which can only be simulated by a solid tumour, probably papillomatous or malignant, floating in a cystic cavity. The differential diagnosis under these conditions will be from ovarium tumour—simple, suppurating, or malignant. The mimicry of the last condition to extra-uterine pregnancy with retained fœtus may be curiously complete. In one case on which I operated the patient had a large abdominal tumour which had been forming for twelve months. Menstruation had ceased from the first appearance of the tumour. The patient considered herself pregnant and prepared for the birth of the child. The medical man was engaged for the confinement, and at the end of nine months some kind of spurious labour (or what was taken for such) undoubtedly took place, but no child was born. When I saw her some three months later she had rapidly emaciated, there was evening pyrexia, and the abdomen was greatly distended by an irregular tumour more marked on one side of the body. On vaginal and bimanual examination the uterus was found to be independent of the tumour and empty, and on palpation in the pouch of Douglas the finger, after displacing fluid, felt two solid bodies which resembled the feet and ankles of a fœtus at full term. At the operation there was malignant tumour of both ovaries with localised ascites and two movable malignant nodules floating in the pouch of Douglas. In difficult cases the evidence may be insufficient to warrant a certain single diagnosis, but it should be sufficient to

offer an alternative selection, and to guard the surgeon from any unpleasant surprises or difficulty after opening the abdomen. The clinical diagnosis of tubo-uterine or interstitial pregnancy is an impossibility. The nearest approach to it which can be made is to recognise that in this form rupture takes place from the second to the fourth month, that this is signalised by diffuse internal bleeding as in the worst cases of early rupture, and that hitherto this has always proved fatal. There is an inter-operative diagnosis—the quick recognition of the pathological condition present—which may be assisted by the consideration already given to the affection itself and by the study of all known specimens. The recognition of the special form of distortion or asymmetry produced in the uterus by its presence is the only point of practical importance. Its bearing on quick operative action will be considered under "Treatment."

(To be concluded.)

THE UTILITY OF INTUBATION OF THE LARYNX.

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(Continued from page 116.)

Difficulties and Dangers.—The epiglottis may be very turgid and the parts generally œdematous, and the point of the tube, though entering the upper part of the larynx, may fail to get through the glottis or even to get as far as it. This can be got over by thrusting the left index finger firmly down to the glottis. I have nearly always found this succeed, and it is not a bad plan to follow systematically. The inexperienced sometimes enter the ventricles of the larynx if they diverge from the middle line. American laryngologists describe subglottic stenosis as a frequent obstruction to intubation.

The chief danger is pushing down membrane before the tube. This occurs very rarely, but even then removal of the tube generally results in the loosened membrane accommodating itself or being expelled. It is advisable, if possible, to have tracheotomy instruments at hand in case complete obstruction should obtain. It must be remembered that the tracheotomy tube may also be blocked by membrane, or may push the membrane before it in a more fatal manner, and intubation has the advantage that there is no temptation presented to the surgeon to suck the tube! I have never had any cases dying from this cause. In the cases that have died or stopped breathing during the operation, I have failed to enter the larynx and got into the œsophagus, and owing to the suddenness of the symptoms I am inclined to attribute them to syncope, though they might possibly be due to the completion of the stenosis by the tube lodging in the œsophagus and pressing on the larynx from the back. In fact, in my fatal cases the laryngeal membrane has generally been thin and friable and unlikely to block the tube. In one case of syncope in which I failed to enter the larynx I tried intubation *post mortem* to ascertain if there was any definite reason why I failed to get into the larynx during life. After accomplishing it I opened the larynx and found the membrane crowded together below the tube, being much thicker than usual, so that it might have blocked it had I got it in during life. It must be remembered that the intubation tube enters the lumen of the membrane cylinder, while the tracheotomy tube has to perforate it, and there is more danger *a priori* in the latter case.

In these cases of syncope the patient has been very much collapsed on admission by being left too long with laryngeal obstruction, and there has been superadded a journey to the hospital. But this syncope would be far more likely to happen if an anæsthetic were given. I believe that this syncope has been largely due to the upright posture that the patient is made to assume, since in one or two cases an arrest of breathing was recovered from on depressing the head. It therefore occurred to me that it would be a great advantage if the operation could be performed in the horizontal position. But this position has the disadvantage that if the patient lay on an ordinary table it would firstly be too high, and secondly, it is difficult to get straight in front of the middle line of the patient when standing by the side of a table without occupying a position of considerable constraint. To obviate this I had the simple table constructed already described. If either tracheotomy or artificial respiration are indicated they can be done at once without moving the patient, while the position is admirable if an anæsthetic is necessary, which sometimes happens in re-intubation or extubation of irritable chronic patients.

In certain cases where the vault of the mouth is low, or where the mouth can not be sufficiently opened, there may be considerable difficulty in getting the long tube in. In these cases a shorter tube or even a short cylinder might be useful.

While the tube is in there is a danger of obstruction by loose membrane. According to Northrup, this may be ascertained by (1) croupy cough; (2) valvular flapping sound; (3) sudden obstruction to expiration and coughing. It very frequently happens that under these circumstances the tube is coughed up. If it is not the tube should be immediately withdrawn and a short cylinder put in (Case 18). These are worn for a few hours and the membrane is generally coughed up. Failing the cylinders, a feather, or Mackenzie's croup brush, guided into the trachea may bring up the membrane (Case 9). These cylinders should also be used if at the primary intubation membrane is pushed down and not coughed up on removal of the long tube, unless the obstruction is complete, when immediate tracheotomy might be more likely to save life.

Ulceration of the anterior tracheal wall I have seen with the older straight tubes, but not in those with the gentle curve. It is however readily recovered from and is not so dangerous as in tracheotomy.

Feeding is accomplished by the Casselbury method. The child is placed on the nurses lap and the head hung down and fed with a spoon, so that it swallows up-hill. After a little preliminary fretfulness it takes food readily by this method. After a day or two they can take food quite readily in the ordinary way.

Coughing up the tube sometimes occurs and stenosis follows. Generally, serious obstruction does not take place for some hours afterwards. But in one of my earlier cases (Case 4) sudden and fatal obstruction occurred in a few minutes. Always insist on an immediate recall in case of coughing up.

The chief danger in extubation is failure to use the set screw and getting among the soft parts and tearing them by divulsion. This could only happen to the careless and inexperienced. If no obstruction returns in half an hour no very sudden obstruction will come on.

Schluck-pneumonie, or pneumonia set up by particles of food or detached membrane, is a theoretical objection, but has never been observed. By the Casselbury method no food enters the larynx, and fragments of membrane are generally coughed up, and aspiration of these fragments is equally likely in tracheotomy as in intubation.

Another purely theoretical objection is the vitiation of the air by passing over the fauces covered with membrane. It must be remembered that in nearly every case of tracheotomy there is tracheal membrane for the air to pass over. Besides, the disease spreads by contiguity, not by micro-organisms carried by respired air.

The Advantages.—Parents will consent, and consent sooner than for tracheotomy. It is a bloodless operation, and requires no anæsthetic, and the depressing effect of the latter is avoided, especially by the use of the horizontal method. Under favourable circumstances it is much more quickly performed, and requires no skilled attendants and no subsequent skilled nursing, no more than fauceal diphtheria. The air inspired is warmed and moistened through the natural passages, and the depressing effects of a steam lint are avoided. The cough is much more explosive and efficient, and retention of membrane and mucus

	M. W.	2 F.	7	1	Very ill, laryngeal stridor and recession. Attempts at Intubation made by *locum tenens* before my arrival and abandoned. Membrane coughed up.	4 hours. (attempt)	Attempt at Intubation, but tube lodged in œsophagus and child immediately stopped breathing. Trachea opened. Albuminuria. (2) Another attempt at Intubation failed. Tracheotomy, tube replaced. (3) Râles in chest. Tube removed. (8) Child sinking. Wound not granulating.	D. (11)	Broncho-pneumonia. P.M. Intubation not difficult.
24	M. D.	3 F.	2	1	Very ill. Fœtor of breath. Stridor recession, croupy cough. Yellow membrane on tonsils. Fœtid nasal discharge. 4 hours later much worse.	4 hours.	(4) Extubation, much recession in 2 hours. Intubation. (8) Extubation, but Intubation in 7 hours. (11) Extubation, but Intubation half hour. (13) Extubation, later had dyspnœa relieved by calomel fumigation. (14) Suddenly worse. Tube replaced. (17) Final Extubation.	C.	
25	Nurse S.	22 F.	2		Generally unwell, voice feeble, fauces nil. (1) Very hoarse, croupy cough. Larynx much white membrane on ventricular bands and ary-epiglottic fold. Coughed up shreds of membrane. 8 p.m. breathing stridulous. (2) 3 a.m., much stridor and spasm. Passed off. 12.30 p.m. Stridor and recession. Intubation with laryngoscope.		Feeding with Cassleberry method in small quantities. Great comfort in breathing. (4) Few râles in chest. (6) Extubation. Mucus obscured mirror, so tactile method adopted. Cords continued reddened and $AgNO_3$ paint had to be applied, but eventually recovered full voice power.	C.	
26	L. C.	5 F.	8	1	Very ill. Excoriation with attached clots about anterior nares with membrane protruding through. Stridor, slight recession. 1 hour later, worse, cyanosis.	1 hour.	Profuse epistaxis followed. Pneumatic plug. Mucous surfaces readily bleed profusely. Purpuric spots. (1) Temperature went up to 103·2°.	D. (1)	

For continuation see page 165.

is avoided, and therefore there is less tendency to pneumonia. In chronic stenosis intubation is invaluable. I have only had three cases, two following tracheotomy and one following intubation (Cases 33, 34, and 27). It is, in fact, the only efficient method of permanently curing chronic strictures.

I append a few brief notes of my cases of intubation in tabular form, also a summary of tracheotomies performed upon cases under my care. These latter were mostly done in 1894 by Mr. Cholmeley in a most skilful manner, and he has also done the preliminary intubation on some of the other cases. All the diphtheria intubation cases had serum treatment except one, who died, and were done from 1895 onward.

It was owing to Dr. Malet's suggestion that I first began to work at intubation, and I must express my indebtedness to him for much encouragement and advice, and also to him and Dr. Totherick for the free use of their cases which they have afforded me. I am also indebted to the late Dr. O'Dwyer, whose death we so much lament, for kindly supplying me with literature on the subject. I have no hesitation in declaring that in spite of its drawbacks (which I have endeavoured to clearly point out) intubation is by far the better operation. This is emphatically so in hospitals, and I believe it will be so in private. The rapid, complete, and bloodless relief, with the retention of the voice (though but a whisper), cannot fail to be a great gratification to the parents. Accidents happen rarely; pneumonia is less frequent. I should like to see it universally adopted.

The two following cases, as well as Case 23, though resembling diphtheria somewhat, followed an alleged attack of measles. The subsequent histories also suggest growth or abductor paralysis.

27.—J. T., aged 3, M., admitted Sep. 23, 1897, had rash four days ago, said to be measles (no doctor). Began with laryngeal stridor this morning. On admission had a fading rash on face suspicious of measles; temp. 100·5 to 102·5. Considerable laryngeal recession, croupy cough. Intubation. Sep. 27: Extubation. Breathed freely. Quarter of an hour later stridor, in one hour bad recession and intubation. Sep. 29: Extubation. Some gingivitis. Oct. 4: Gums bleed readily. Oct. 8: 1 a.m., breathing stridulous, but settled down. 3 a.m., another attack. 4 a.m., worse. Calomel fumigation hourly. 9.30, worse. Intubation. Oct. 10: Extubation, stridor, and recession; then suddenly stopped breathing. Intubation and artificial respiration restored animation after considerable interval. Oct. 16: Extubation. Immediate intubation necessary. Oct. 18: Tracheotomy done. Oct. 30: No air can get through larynx. Nov. 17: Attempt at intubation; tube would not pass through glottis. Probe passed through wound into larynx; vomited, vomit entered trachea; artificial respiration necessary. Nov. 20: Anæsthetised in horizontal position. Lister's sounds passed through tracheal opening into larynx, and dilated it up. Then smallest intubation tube passed, and then No. 2, then No. 3 vulcanite. Plug placed in wound to keep it open, but withdrawn on Nov. 23. Went on well, got about well. Feb. 2: Tube extracted under anæsthetic, but had to be replaced. Feb. 9: Went to convalescent home with intubation tube in situ. Readmitted April 4. April 28: Tube extracted under anæsthetic; recession returned. Tube for six years old child inserted. May 7: Extubation, recession, stridor, and cyanosis. Attempt to insert tube for 10-12 years child, but too long, so tube for six years child reinserted. Sent to convalescent home May 9. June 1: Readmitted. June 7: Another extubation under anæsthetic. Immediate obstruction. Tube for eight years child attempted, but failed; then tried tube for six years again, but first attempt failed, and as there had been some delay, and thyrotomy had been determined on, tracheotomy was done by Mr. Cholmeley. July 1: Thyrotomy by Dr. Deanesly. There was much œdema of the tissues of the cords and ventricular bands, and stenosis of the cricoid ring. The right cord was completely removed, the cricoid was nicked and divulsed, and the tissues generally were scraped freely. July 14: Intubation tube passed with great difficulty, and plug put in tracheal wound. Still under treatment.

28.—W. G., æt. 4, M., admitted Dec. 9, 1897. Three weeks before had measles and bronchitis; two hours ago began to have croupy cough. There was dyspnœa, recession, and croupy cough; no pyrexia, no membrane. Tube inserted three hours after. Urine, very minute trace of albumen. Dec. 13: Extubation. Stridor and recession at once, which very rapidly got worse. Three unsuccessful attempts made at intubation, and he became very cyanosed, and so tracheotomy was done. Jan. 13: Still unable to breathe through larynx. If tracheotomy tube is removed wound collapses. Anæsthetised. Wound had to be kept open with short tube while intubation was done. Tube for three years child inserted, then tube for five years child. Wound plugged. Jan. 25: Extubation under chloroform. Forty minutes later obstruction returned. Short tube inserted in tracheotomy wound and larynx examined under chloroform. Cords clean, but do not move. No growth seen. Intubation. Feb. 10: Extubation. Rapid supervention of dyspnœa and intubation. Feb. 16: Extubation and intubation. Mar. 1: Extubation. Air way clear. Mar. 3: Again recession and cyanosis. Tube replaced. Mar. 10: Extubation. Breathing free. Mar. 12: Stridor and recession following coughing. Intubation necessary. Mar. 14: Final extubation. Discharged May 9, cured.

29.—*For Acute Laryngitis.*—M. L., æt. 2, F., admitted Feb. 24. Had a cold for a week, croupy cough for three days, stridor and dyspnœa for a day. Does not look ill; colour good. Considerable stridor, marked recession, croupy cough, very restless. Calomel fumigations at first relieved, but symptoms became worse about midnight, so intubation done. Tube removed on fourth day. Breathes comfortably. No bacilli diphtheriæ found in mucus attached to removed tube. Cured.

30.—*For Œdema of Larynx.*—Case of scarlet fever, æt. 3 (?), suddenly developed laryngeal stridor. Intubated, and extubated on fourth day. Cured.

31.—Case of measles with pneumonia, æt. 2 (?). Had recession and cyanosis. Two tubes of different sizes inserted. Neither gave any relief, so obstruction was probably lower down, and tube withdrawn. Died.

32.—*For Scald of Throat.*—Æt. 4 (?). Tube removed next day. Cured.

33.—*For Obstinate Chronic Stenosis.*—B. M., æt. 4, M., admitted Nov. 10, 1894. Ill for a week. Cyanosis, recession. Tracheotomy at once by Mr. Cholmeley. Piece of membrane coughed up. No pyrexia. Could not tolerate removal of tube. Nov. 13: Fenestrated rubber tube inserted. On blocking outer opening he emitted a croaking sound, but could not inspire through the larynx. Put on heavy course of mercury without avail. Jan. 14: Anæsthetised. Intubation tube would not pass, but passed Lister's sounds through wound into larynx and dilated it up till tracheotomy dilator could be passed, then smallest intubation tube passed. Jan. 21: Tube removed and next size passed. Jan. 24: Tube for four years old child introduced. Jan. 31: Extubation and reintubation. Feb. 8: Again extubation and intubation. While tube was out could breathe without stridor. Feb. 16: Final extubation. Can only whisper. Feb. 17: Can phonate well and sing.

34.—W. D., æt. 22, M., admitted Jan. 22, 1896. Had well-marked history of syphilis. In Jan. 1895 was admitted into Birmingham General Hospital under the care of Mr. Heaton, with laryngeal dyspnœa of gradual onset, and a few days later the dyspnœa became extreme, and Mr. Leedham Green did tracheotomy. He was never able to do without the tracheotomy tube. On admission here he could not do without his tracheotomy tube; the cords are red and do not move in the arytenoid region. There is a granulation mass below the anterior commissure. There are abundant syphilitic lesions. A laryngeal probe was passed into the larynx and out at the wound, and the larynx divulsed antero-posteriorly. Then a fenestrated rubber tube was inserted and the outer hole blocked for intervals. On Feb. 7th he could wear it all day plugged, but had to withdraw the plug at night. Feb. 10th: Smallest adult intubation tube inserted with laryngoscope and immediately coughed up. Next size inserted and coughed up in five minutes. Tracheotomy tube then replaced and next day the next size intubation tube inserted, the wound being closed with a plug. The next day he could take food readily in the erect posture. This tube was coughed up in a week and he could breathe quite readily. He was discharged on March 25th, 1896, and has been under observation since. Once he had an attack of acute laryngitis which threatened to cause trouble, but it subsided under one local application of silver nitrate solution.

CASES OF TRACHEOTOMY.

(Operations by W. F. Cholmeley, Esq., F.R.C.S.)

For Diphtheria.

Age	No.	C.	D.
2-3	4	0	4
3-4	1	0	1
4-5	2	1	1
5-6	3	0	3
8	1	1	0
	11	2	9

For Œdema of Larynx.

	Age.	No.	C.	D.
In Scarlet Fever -	4	1	0	1
In Hepatic Cirrhosis	13	1	0	1
Total		13	2	11

N.B.—Only 4 of these cases were treated with Serum ;
1 cured, 3 died.

MEDICAL ABSTRACTS.

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NEUROLOGY.

BY DOUGLAS STANLEY, M.D., M.R.C.P.

Acute Encephalitis.—Encephalitis, or polio-encephalitis, is a lesion which has attracted considerable attention from neurologists, and there is now an interesting amount of literature bearing on the subject. It is therefore possible to point out broadly the clinical characteristics, diagnosis, and prognosis of the disease. From a review of the recorded cases, the most logical conclusion seems to be that the condition is apparently a toxic one, and that the various specific diseases play an important part in its etiology. Thus, since the beginning of the recent series of epidemics of influenza a large number of cases have been recorded, and, in a series of cases described by Oppenheim, whose contribution is one of the most valuable, influenza is a factor in several; while Freyhan, Nauwerck, Putnam, Königsdorf, Pfuhl, and many others, both in this country, America, and Europe, show the importance of this disease as a cause of encaphalitis. In some cases influenza bacilli were found in sections of the brain; but this is far from being the only specific disease which may be followed by inflammation of the grey matter of the brain. Fürbinger records a case in which scarlet fever was apparently the cause, cerebral symptoms setting in about six weeks from the beginning of the illness. A very interesting case is described by Putnam, in which mumps seemed to be the cause of the illness. The patient was a boy aged 13, who had an attack of mumps in November, 1895. In ten days' time symptoms of encaphalitis set in, with paralysis of certain of the ocular muscles. The case went on to recovery. Other causes, such as alcohol trauma (?), endocarditis (?), cerebro-spinal meningitis (?) are also suggested. In the case of the last three there would seem to be a necessity for further information. Syphilis, on the other hand, is considered by some writers not to be a cause of acute encephalitis.

The following is a review of the symptoms gathered from a fairly large number of cases now recorded. The temperature may be slightly or not at all raised. Vertigo, prostration, headache, pain in the back of the neck are variable symptoms, and vomiting, though recorded in some cases, is generally absent. Paralysis of the ocular muscles in varying degree is as a rule present; in point of fact, ptosis and diplopia may be the first manifestation. In other instances bulbar symptoms, paresis or paralysis, of somewhat irregular character may be present in the limbs. The facial, lingual, and muscles supplied by the fifth nerve may all participate in the disorder. Diaphragmatic paralysis may cause death. The tendon jerks are diminished or lost, and ankle clonus may be present. Electric reactions have in some cases shown diminution and even disappearance, but speaking generally they are little changed; at the same time, cases are recorded in which the response to tetanising currents disappeared, constituting the so-called myosthenic reaction. In several cases optic neuritis has been found, and the pupil reflexes are noted as being sluggish or the light reflex lost. The pupils may be unequal. Hæmianopsia has also been recorded. Complete deafness and tinnitus aurium constitute the disorders of hearing. In a fairly large number of cases aphasia, both motor and sensory, has been present; delirium, with screaming or stupor, are also noted. Sometimes word deafness may be the only affection of the speech system. Epileptiform seizures are described by some authors, and were markedly present in Putnam's case following mumps. The pulse beats may be reduced to 50. The patient may sink into a typhoid condition with Cheyne-Stokes' respiration. Bed sores, hypostatic pneumonia, œdema in different parts, may be present towards the close of those cases which do not end rapidly. The majority of recorded cases have occurred in children and young adults, though this is by no means a rule, for some of the patients were over middle age.

One important point which has been brought out by a more extended knowledge of the disease is that of prognosis. In the earlier clinical history of encephalitis the idea was that the condition was a fatal one, and should recovery take place it was assumed that the diagnosis was erroneous. This is hardly a correct position, and very many cases have been recorded by the different authors quoted in which recovery took place. Perhaps the most interesting example is that given by Wiener, in the winter number of *Brain*, 1898, in which there were two distinct attacks, the second of which was fatal. So important is this case that a brief review of its history will not be out of place. The patient was a healthy child aged three, who fell down a stone staircase. Next day the following symptoms began:—Convulsion, loss of speech, inability to walk, peevishness, screaming alternating with stupor, irregular temperature and a varying pulse. Increase of reflex action, no alteration of sensation. The child completely recovered. After two and a half years similar symptoms developed, shortly after an attack of catarrh of the nose and throat (influenza?). The duration of the second attack was about three weeks, when it ended fatally. It is evident from this case, as also from the series of observations collected by Oppenheim, that recovery is not by any means infrequent.

Polio-encephalitis may conveniently be divided into two forms, one the so-called Polio-encephalitis Superior of Wernicke, a form with which we have been more or less familiar for some time, and in which the grey matter of the medulla and of the aqueduct of Sylvius is affected. The second form in reality constitutes the lesion ~~to which~~ we would now more particularly draw attention, and appears to have first been recognised by Strümpell. In this it is the grey matter of the cerebral cortex which suffers most severely. Bearing in mind the fact that the grey matter of the whole central nervous system is liable to undergo this change, it is not surprising to find such a vast variety of symptoms. Thus, polio-myelitis is well known; polio-encephalitis superior (Wernicke)—chiefly characterised by ophthalmoplegia; polio-encephalitis (Strümpell's cortical-diffuse), causing aphasia; monoplegias, etc. In this latter form the basal ganglia and the cerebellar cortex may participate. Again, cases are described in which there has been a union of the lesions affecting the different divisions of the cerebro-spinal system—polio-encephalo-myelitis. The morbid anatomy of Strümpell's form has recently received much consideration, and a very full description has just been published by Wiener, of New York (*Brain*, Part 80), the material being taken from the case already quoted as coming under his observation. The following is his description in brief:—"The dura mater appeared normal in macroscopic appearances; its inner surface was smooth and shiny, nowhere was it thickened. The pia could be stripped off in patches from the cortex. At the bottom of the sulci some difficulty was experienced in detaching it, and often pieces of cortex would come away with it. The lateral ventricles contained only a very small amount of a reddish serous-looking fluid. The choroid plexus was filled with blood; the ependyma was smooth; the third and fourth ventricles and the cerebellum were of normal macroscopic appearances. . . . The blood vessels in the pia were markedly congested and filled with blood. Here and there were small hæmorrhagic infiltrations. There was also noticed an abundant production of cells somewhat resembling the cells which normally coat the surface of the pia. Besides this, a reticulum of very fine fibres covered the entire surface of the pia, which appeared to be fibrinous. This was the appearance of the pia when stripped from the cortex. In some places, on cross section, I found it closely adherent to the cortex, and presenting the same pathological picture above described. Pieces of cortex taken from the hemispheres, and sections made from the basal ganglia, pons, and medulla, all showed a very characteristic picture. There were many dilated and overfilled blood vessels (Fig. 5). The walls of the blood vessel, both veins and capillaries, were infiltrated with round cells. The intima did not appear to be affected. The media and adventia coats seemed to bear the entire burden. Along the walls of the blood vessels, and in the perivascular spaces, numerous wandering leucocytes could be seen, together with red-blood cells (Figs. 1—3). In the region of the third left frontal convolution (Fig. 2), in the anterior extremity of the first temporal, and in the olivary body in the region of the twelfth nerve, capillary hæmorrhages could be distinctly seen. No necrosis of tissue nor actual destruction of nerve elements was observed anywhere. In regard to the ganglion cells, which were examined after the method of Nissl, I found that those which were situated in the neighbourhood of hæmorrhages and very much diseased blood vessels would not take on the stain very readily. Some looked swollen, and so blurred that neither the nucleus or nucleolus could be recognised. The whole appearance resembled the picture which we recognise as cloudy swelling (Fig. 7). The peri-cellular spaces were distinctly enlarged. Although several sections were stained for the purpose of bacteriological examination, no positive results were obtained."

The treatment of these cases at present is unfortunately unsatisfactory. Expectant methods are very important. Complete rest and low dieting are necessary. Prophylaxis is necessarily difficult, as it is impossible to predict the occurrence of encephalitis in cases of influenza, etc. On the other hand, it is not unreasonable to say that the members of a neuropathic family should use the very utmost endeavours to avoid contagion in view of this possible result.

A very typical case of polio-encephalitis is described by Dr. H. T. Patrick,* in which the various widespread symptoms and irregular course of this disease are strongly brought out. In this case the fatal result was due to diaphragmatic paralysis Microscopic examination by the author was to a certain extent meagre, but at the same time "the capillaries and arterioles were enormously distended throughout, and in some places the perivascular spaces seemed to be also distended," and various cells in the different nuclei showed some degenerative changes. The author makes a suggestion that the proper treatment of cases of this kind would be to wash the blood, by which he means copious phlebotomy, with simultaneous transfusion of normal salt solution. This suggestion seems theoretical rather than practical, and we cannot but think that under such circumstances this procedure would prove rapidly fatal, and granted the difficulty of diagnosis in many cases, the uncertainty of prognosis, copious bleeding accompanied by transfusion would seem rather heroic.

Cerebral Diplegia.—During the past year considerable attention has been devoted to this subject, and some interesting cases of its occurrence in several members of the same family have been put on record. One of the most striking group of cases is described by Dercum (*Journal of Nervous and Mental Diseases*, 1897). The father of the patients did not present anything remarkable in his clinical history. He had been married three times, and none of the children of the first two wives were affected, while three out of the four children of the third wife showed diplegia. The interest of this circumstance is enhanced by the fact that a first cousin of the mother's on her paternal side was affected by paralysis apparently similar in character, the condition being somewhat like the diplegic form in its history so far as information could be obtained. The mother herself showed nothing abnormal in connection with her nervous system, and all the four confinements were uncomplicated and natural. The first child was healthy at birth, and up to the age of 16 months showed nothing abnormal. He was able to walk and talk, and was apparently in every way healthy, when he was seized with a severe attack of convulsion, causing unconsciousness. After this attack he was dull and showed impairment of speech, and shortly afterwards it was noticed that both his legs were stiff and he moved them awkwardly. The arms were similarly affected, and this condition went on increasing till he came under observation at 11 years of age. He showed spastic gait, the legs being extended and rigid, speech defective, and he became subject to attacks of *petit mal.* His younger brother was well till the age of 4, when he contracted measles, though not apparently severely. On convalescing he was found to be stupid, and both legs and arms were weak, especially the right. On examination he presented the characteristic signs of diplegia, and, like his brother, was subject to *petit mal.* There were also athetoid movements. The younger of the patients was attacked by measles (at the same time as his brother the last case) at the age of 2, and he also became diplegic and affected with seizures. There was considerable mental defect in all the patients, and vision did not seem normal. The view which Dercum takes of these cases is that their cerebral development proceeded in a healthy manner up to a certain time, and that probably in the absence of any untoward circumstances their upper neurons would have maintained a healthy condition though having slight resistive power; consequently a febrile illness or an attack of ordinary infantile convulsions was enough to overthrow their feeble equilibrium with the result just described. In one case such accident took the form of convulsions, in the other two of measles, which brought the future cortical development to a close; in other words, cerebral diplegia supervened.

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* Journal of Nervous and Mental Diseases, October, 1897.

There are other cases on record of diplegia occurring in several members of a family, Brower having observed four cases in a family of five children.* In these instances the father's history was bad, there being alcohol and malaria present, though syphilis was doubtful. There were signs of degeneration and also nystagmus. The children were all boys, and four out of the five living showed diplegia. Again, Archard and Fresson† record two cases occurring in sisters. The relation of these two cases to Dercum's is curiously interesting, for the elder, at 16 months old, had an acute attack of some kind, though it was impossible to ascertain its exact nature. The younger had an attack of small-pox when twelve months old. In each case the symptoms dated from these events. In the case of these two patients there was nothing abnormal on the part of the patients, but another child was epileptic.

The athetoid or choreiform movements referred to in these cases have been described in connection with others, and they sometimes assume a very marked character. Thus, in a case of cerebral diplegia shown by C. R. Mills before the Philadelphia Neurological Society, one of the most pronounced symptoms was a tremor "most marked in the head and right arm. The movements are coarse and jerky in character, those of the head being lateral and antero-posterior and half rotatory. The head, trunk, and extended arm seemed to move together.

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* Medicine, January, 1897.

† Gaz. Hebdom. de Méd. et de Chir., 1, 1896.

The tremor of the right upper extremity involves the whole arm, and is partly lateral and partly rotatory, and is most marked in the hand. The left upper extremity is affected with tremor of the same character but less in degree. The left lower extremity is more affected than the right, with the same coarse tremor laterally and rotatory in direction and more marked distally." The other symptoms in this case, together with the history, pointed to its being one of cerebral diplegia, not chorea, as suggested by one physician, the very marked amount of tremor constituting its peculiarity.

The Morbid Anatomy of Huntington's Chorea.—During the past year very important additions have been made to our knowledge of the morbid anatomy and pathology of this rare condition. It may be remembered that this disease is one affecting several generations, and characterised by jerky choreic movements and a tendency to dementia. Several cases are now on record, but up to the present we have had but scanty information concerning the anatomical lesion present. Mitchell Clarke* and Joseph Collins† have recorded autopsies of cases under their own observation. In Collins's case speech had been very imperfect. There were marked mental symptoms, and the duration of the case was ten years, the patient being the third generation affected. On *post mortem* examination there was considerable dural adhesion and thickening of the diploe. The pia was non-adhesive. The brain, which weighed 43½ oz., showed diminution of anterior convolutions with widening and shallowness of the principal fissures. On naked-eye section the grey matter was under the average thickness, and there was a "mottled streaked appearance and cribriform state in the specimen on cross section of the brain." A microscopic examination was made of a large series of sections, the result of which was as follows:—"(1) A decay or slowly progressive degeneration of the ganglion cells of the cortex throughout the brain, especially of the two deepest layers, the layers of large pyramids and polymorphous cells This cell death was particularly evident in the Rolandic region, very much less so in the anterior pole of the brain, and incomparably less in the posterior pole. (2) Increase of glia tissue, but not sufficiently prominent to constitute sclerosis, the conspicuous increase being about blood vessels and ganglion cells. (3) Enlargement and distention of the pericellular spaces. (4) Slightly diseased blood vessels, consisting principally of a proliferation of the nuclei of the adventitia and a thickening of the intima. This involvement of the vessels was not regular or symmetrical, but showed itself in certain sections of vessels only. (5) Relative paucity of the medullated fibres of the cortex. In short, it might be said that the lesion was a chronic parenchymatous degeneration of the cortex, with consecutive and secondary changes in the interstices, the brunt of the disease having been borne by the motor regions. There was in consequence a degeneration of the pyramidal tracts in the spinal cord."

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* Brain, Part 78. 1897.

† Journal of Nerv. and Ment. Diseases, January, 1898.

In Clarke's case there was a "widespread but partial degeneration of the cells in the cerebral cortex, especially in the cells of the second and third layer, most marked in the frontal and motor convolutions, together with an increased amount of interstitial tissue and the number of neuroglia cells." Beyond some slight increase of neuroglia the cord showed no lesion, differing throughout from the case described by Collins in which the pyramidal tracts showed degeneration. These changes coincide with what other observations there are already on record by Menzies, Oppenheim, and Dana. From all these it would seem that the cerebral cortex is the part initially affected, but whether the lesion is primarily a degeneration of the nerve cells or vascular change followed by nutritive alteration, is still a moot point. Comparing these changes with those found in fatal cases of severe chorea of the ordinary type, in which vascular congestion, hæmorrhagic extravasation, and slight exudation have been found, there is much to point to the cellular lesion being possibly due to an altered nutritive supply. Onuf, in discussing the case shown by Collins as reported above, expressed the opinion that the disease is a primary degeneration, originating in the parenchyma rather than in the neuroglia.

Another rare disease of the nervous system, to our knowledge of which some slight addition has been made, is hereditary cerebellar ataxy. It will be remembered that this condition is characterised by the appearance of ataxy occurring in several members of the same family: choreiform movements of the head and arms, staggering gait, knee jerks present sometimes exaggerated, seldom nystagmus, no deformity of either spinal column or limbs, speech generally defective. These cases as a rule appear at a later age than Friedrich's ataxy, with which it is possible to confound them. Several cases have now been recorded by Nonne, Menzel, Marie, Londe, Collins, Douglas Stanley, and others, but the most complete series on record is that published by Sanger Brown.* Preparations from one of these cases were shown before the Neurological Society of London during the past session. Briefly speaking, the following conditions were found. A considerable number of corpora amylacea were discovered throughout the spinal cord, especially in the dorsal part in the entrance zone of the posterior roots and throughout the posterior columns. There was thickening of the pia and increase of the neuroglia. The cells in Clarke's column were reduced in number, and some showed degenerative changes. In the cervical region changes were much more marked, there being a considerable amount of degeneration in Gall's column and in the neighbourhood of the septum. The thicker fibres in this column and in Burdach's were thinner and scarcer than normal. The direct cerebellar tracts were diminished in size. There did not seem to be much atrophy of the cerebellum, but a certain reduction in the number of Purkinjé cells was ascertained. At the same time, this change was not general throughout the cerebellum. It will be seen from this that the changes discovered *post mortem* were meagre, being certainly less marked than in the few cases already recorded. At the same time, the fact remains that the microscopic findings certainly differed from those of an ordinary case of Friedrich's disease. Some support therefore is given to the opinion of P. Marie that these cases differ in some very marked points from Friedrich's disease, while at the same time it must be admitted with Londe that there is much similarity between the two forms and that in certain cases they seem to combine, the cord showing the lesions usually found in Friedrich's disease, while extensive atrophy of the cerebellum may also be present.

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* Brain. 1892.

REVIEWS.

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THE BLOOD: HOW TO EXAMINE AND DIAGNOSE ITS DISEASES.*

THIS work is meant to apply rather to the pathological and microscopic characters of the blood than to a clinical description of the various diseases in which the blood would seem to be the tissue primarily affected. The author consequently opens with an extensive consideration of the methods of examining the blood corpuscles, both numerically and by staining and the classification of different cells by means of their reaction to colours. From an extensive experience in staining, the writer comes to the conclusion, as others have done before him, that the Ehrlich-Biondi method of staining is unsatisfactory. "The colours are more or less blurred, and as the green colour of the nuclei is very indistinct, there is a considerable difficulty in obtaining a good insight into the nuclear structure." As a method of fixing films, a mixture of equal parts of alcohol and ether is recommended by the author, and for a large majority of purposes this is in our experience a highly serviceable method. The general morphology of the blood occupies a considerable space and is principally compiled from the works of Hayem, von Limbeck and others. As regards nucleated red blood corpuscles, the author states that he has frequently found them in several forms of primary and secondary anæmia, and considers that they ought to be expected when the oligocythæmia reaches two and a half million per cmm., and that they are significant of an effort on the part of the bone marrow to make up a deficient number of red cells. The various forms of white corpuscles are described at considerable detail with the aid of some very excellent lithographs. The conditions under which these cells vary are fully described. Following Hayem, the author gives four degrees of anæmia, a classification which is useful in practice though somewhat artificial. Having considered what we may term the general pathology of the blood, its special characters are next described as they occur in the various diseases, viz., Chlorosis, Pernicious Anæmia, Leucocythæmia, Hodgkin's disease, Splenic Anæmia, etc. The author quotes a case of chlorosis in a girl of 16 with three and a half million red blood corpuscles, and in which he found numerous nucleated red cells, and he believes that their occurrence in this disease is more frequent than is supposed. In this we entirely agree with the writer. The pathogenesis of the various diseases we consider is somewhat too brief, and as this work is one professedly dealing with hæmological pathology, we should have expected to find more detail as to the possible causation of blood diseases. We notice that the author makes the statement that in Hodgkin's disease the blood practically shews no special features, at any rate in the earlier history of the lesion and when the "patient has become cachectic, then all the signs of the anæmia associated with cachexia are present." The author does not allude to the point in diagnosis of this disease from lymphosarcoma, a question of considerable importance, and at times of no little difficulty. Splenic anæmia is described from the writings of others as the author does not seem to have had any cases under his own observation, and with some of his statements we are obliged to disagree, as they are not borne out by personal experience in several instances. The malarial parasite comes in for its due share, and reference is made to the condition of the blood in diabetes, the specific fevers, rheumatism, tubercle, myxoedema, etc. Only a short space is given to Infantile Forms of Anæmia, a subject on which we require information. On the whole this work, though small, is likely to supply a long felt want, for so far as English medical literature is concerned, we do not possess any handy manual on hæmatology.

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* The Blood: how to examine and diagnose its Diseases. By Alfred C. Coles, M.D. London: J. & A. Churchill.

ELECTRO-PHYSIOLOGY.*

THE first volume of this admirable translation has already been reviewed in these columns. This second volume consists of Chaps. vi.—xii. Chap. vi. deals with electro-motive action in vegetable cells; vii. treats of the structure and organisation of nerve. Then follow three chapters upon nerve-physiology, viii. treating of the conductivity and excitability of nerve, ix. of the electrical excitation of nerve, and x. of electro-motive action in nerve. An account of electrical fishes is given in Chap. xi., while the subject of the last is the electro-motive action in the eye.

In Chap. vi. is contained an interesting account of the electrical conditions and manifestations in certain vegetable cells, particularly those of the leaf of *Dionæa* and the pulvinus of *Mimosa*. Due prominence is given to the researches of Prof. Burdon-Sanderson, which are so well known in this country.

The following chapter gives a detailed account of the comparative histology of the nerve-fibre, with a special account of the minute structure of the axis-cylinder, whose fibrillated structure is believed to be universal throughout the animal kingdom.

In the account of the conductivity and excitability of nerve there is necessarily some preliminary discussion of the anatomical connections between nerve-cells and nerve-fibres, and of the mode of division of nerve-fibres. The rate of conductivity in nerve, the action of anæsthetics upon the conductivity, and theoretical considerations arising therefrom are next treated.

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* Electro-Physiology. By W. Biedermann. Translated by Frances A. Welby. 8vo. Macmillan. 1898. Vol. ii.

Chapters ix. and x. constitute the greater bulk of the volume, and treat of the larger number of facts and theories in general nerve-physiology.

The account of the electrical fishes is full of information concerning these remarkable animals. Much work has been done upon the histology and physiology of the electric organs, and a complete historical narrative will be found in this chapter. The most recent work is also included, and a copious bibliography appended.

The work is essentially one of reference for advanced students, constituting a rich mine of information on all branches of electro-physiology. It will also be of considerable service to teachers and original workers, for though such in most cases prefer to consult the original papers, yet an English translation of Biedermann's work will often give useful guidance as to the limits of our present knowledge in particular cases.

The translation is well done, and Miss Welby is to be congratulated upon the most satistactory completion of her arduous task. There are, however, a few slips, such as, for instance, on page 41, where *cyclostoma* is written for *cyclostomata*. This might be puzzling to a student, since *cyclostoma* is an invertebrate animal.

ORTHOPÆDIC SURGERY.*

As is always the case with the medical publications of the Rebman Publishing Co., this volume is well printed on good paper and is well illustrated. If we may take Dr. Moore as an example, American surgeons evidently embrace under the head of Orthopædic Surgery a far wider range of subjects than we, in this country, are accustomed to include; for the volume before us includes descriptions of such subjects as pseudo-hypertrophic paralysis, acute anterior poliomyelitis, acute suppurative arthritis, sprained ankle and tubercular arthritis. Entering more into detail, we may say with confidence that the information conveyed by the book is sound and good, but that the various portions are of unequal value and that passages occur here and there, which seem carelessly worded and are calculated to convey an inaccurate impression to the reader. As an example of this class of statement, we take the following, viz., that, in cases of scoliosis, the mammary gland on the side corresponding to the convexity is atrophied. Certainly the thoracic wall in that side is flattened, and this gives an appearance of flatness to the breast; but, to say that the gland is atrophied is surely inaccurate.

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* Orthopædic Surgery. By James E Moore, M.D., Professor of Orthopædia and of Clinical Surgery in the College of Medicine of the University of Minnesota, etc. With 177 illustrations; pp. 354. London: The Rebman Publishing Co. (Ltd.) 1898.

The sections on treatment are by far the best part of the book. The author enters into a full discussion of various methods of treatment, but he gives the reader guidance by stating clearly what are his own opinions on the subject. We are glad to see that he deprecates the use of mechanical supports in scoliosis, except in exceptional cases, and he says that even then such supports are not curative. The chapter on the treatment of talipes is specially good and practical. Dr. Moore advocates Phelps's operation in the treatment of obstinate talipes equino-varus and we think he does so rightly, for in our experience this is a most valuable operation, especially in those cases where tenotomy has failed and where there is great tension of the soft parts on the inner side of the foot. In speaking of weak ankles, so common in children, the author says, "The condition is simply a lack of strength in the muscles supporting the ankle, and has a natural tendency to improve as the child grows older and stronger." Then he goes on to advocate as the treatment for this the use of boots with steel uprights. We are quite aware that this is a common treatment, and we cannot help feeling, from our own experience of such cases, that it is no more the rational and proper treatment than is the treatment of scoliosis by the use of mechanical supports. In the section on sprains we are glad to see that the author advocates the treatment by complete fixation, and that he says, "It is a mistake to insist that an injured joint must be used from the first to prevent ankylosis."

The chapters on tubercular disease of joints give much useful information, especially, as we have said above, in regard to treatment.

While taking exception to some of the author's opinions, we feel that we can without hesitation recommend this book as a valuable addition to the literature of Orthopædic Surgery.

PATHOLOGICAL TECHNIQUE.*

This is a work designed for practical use in the prosecution of pathological research. The plan followed is a good one, in that the student is first instructed in *post mortem* examinations. The methods of examining gross lesions are carefully described, and thus the reader from the first is enabled to realise the beginning of the pathological problem involved in every examination. The second part of the work deals with bacteriological examination, and the various methods and formulæ for the preparation of media are clearly given. This portion of the work is also well illustrated, and the different pyogenic and pathogenic organisms are accurately described under the heading of Bacteriological Diagnosis. The third part of the book deals exclusively with histological methods. The authors' object here has evidently been to collect together the latest methods for the histological examination of different portions of the body. As might be expected, neurological examinations take up a large part of this section, the different Golgi methods, Exner's and Heller's methods, all being carefully detailed. Throughout this portion of the work the system followed is to give the steps of procedure in order and number. The result is that the student is able to follow a wholly new method with ease, as he can see at a glance the next step to be taken. The authors have refrained from long descriptions in this portion of the work, a point which adds considerably to its practical value. Taken as a whole, we consider the book a fairly complete manual for the pathological laboratory and one which is certainly destined to be useful.

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* Pathological Technique. By Frank Burr Mallory and James Homer Wright. London : The Rebman Publishing Co.

ANNUAL AND ANALYTICAL CYCLOPÆDIA OF PRACTICAL MEDICINE.*

We have received the first instalment of Dr. Sajous' new Annual of Practical Medicine, in connection with which an alteration in scheme has been adopted. For the last ten years the annual has taken the form of a series of long articles on the various departments of medicine, in which the advances made in those departments during the past year have been recorded in connected series. The difficulty of finding particular references, and the complete omission of all mention of those subjects in which no new work had to be recorded, has seemed to Dr. Sajous to demand some change of plan; and accordingly an alphabetical arrangement has now been adopted, and the book will include a summary of all the work done in connection with each subject during the last nine years. Such a reconstruction must have involved an enormous expenditure of labour on the part of Dr. Sajous and his assistants, but they are to be congratulated on the great improvement in the usefulness of the work which has resulted. The first volume contains a marvellously complete account of all the important medical work done during recent years, and if the other volumes come up to its standard, as they are sure to do, a very important work will have been published.

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* Annual and Analytical Cyclopædia of Practical Medicine. By Charles E. Sajous, M.D., and One Hundred Associate Editors, assisted by Corresponding Editors, Collaborators, and Correspondents. Volume i. Philadelphia, New York, Chicago: The F. A. Davis Company. 1898.

FORENSIC MEDICINE AND TOXICOLOGY.*

DR. DIXON MANN's work on Forensic Medicine and Toxicology has from the first established itself as the leading book on the subject, and its position is even strengthened by the alterations introduced into the second edition. As far as we can judge these are not very numerous, though a close comparison of the two editions would probably show that many points have undergone careful reconsideration. The sections on Death from the Electric Current, on Life Assurance, and on Poisonous Foods, have, however, been re-written; whilst short sections on the Obligation of Professional Secrecy, on Sudden Death from Natural Causes, on Blood Poisons, and on the *Post-mortem* Imbibition of Poisons, have been added, with the result of enhancing the value and completeness of the work. The book is entirely worthy of the very high reputation which it has acquired.

BURDETT'S HOSPITALS AND CHARITIES, 1898.†

THE main interest of Sir Henry Burdett's annual volume always centres in the few preliminary critical chapters. The rest of the book does not admit of much variation; it cannot exceed its own level of accuracy and completeness. This year, special attention is given to the charitable outcome of the Diamond Jubilee, with the result of showing that a very large addition was made to the combined funds of the various charities of the country. There is as usual an instructive analysis of the results and methods of the Hospital Saturday and Sunday movements.

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* Forensic Medicine and Toxicology. By J. Dixon Mann, M.D., F.R.C.P., Professor of Forensic Medicine and Toxicology in Owen's College, Manchester; Examiner in Forensic Medicine in the University of London, and in the Victoria University, etc. Second Edition. revised and enlarged. London: Charles Griffin and Company, Limited. 1898.

† Burdett's Hospitals and Charities, 1898. By Sir Henry Burdett, K.C.B. London: The Scientific Press Limited.

MATERIA MEDICA, PHARMACY, PHARMACOLOGY, AND THERAPEUTICS.*

THE recent revision of the British Pharmacopœia has brought about the publication of a third edition of Dr. Hale White's well-known text-book. The main part of the work has not undergone any material change, and the account of the physiological and therapeutical action of the various drugs stands much as in the last edition. The important changes which have been introduced into the Pharmacopœia however are of course fully represented in the present publication. The text-book is clearly and, as far as is possible in connection with such a subject, interestingly written, and well deserves the reputation which it has gained.

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* Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. Hale White, M.D., F.R.C.P., Physician to and Lecturer on Pharmacology and Therapeutics at Guy's Hospital, etc. Third Edition. London: J. and A. Churchill. 1898.

THE
BIRMINGHAM MEDICAL REVIEW.
OCTOBER, 1898.

ORIGINAL COMMUNICATIONS.

INGLEBY LECTURES FOR 1898.

EXTRA-UTERINE PREGNANCY

BY JOHN W. TAYLOR, F R.C.S. ENG.

LECTURE III.—(CONCLUDED.)

TREATMENT.

THE treatment of extra-uterine pregnancy is essentially operative. This fact is set forth very strongly in the well-known assertion of Werth, who declares that "ectopic gestation must be considered as a malignant new growth, and therefore should be removed by operation at every stage of its development." This is a sweeping assertion, and one or two exceptions must be made to it. For example, in the latter half of a tubo-abdominal or tubo-ligamentary pregnancy, when no sign of danger is present, it may be better practice to wait for operation until a time at or about the usual period of delivery, when the child is viable and strong, than to operate earlier when the life of the child is certain to be sacrificed. Some surgeons have advised that we should go beyond this and wait for operation until after the death of the child, so as to have, if possible, a less vascular placenta to deal with. For my own part, in all cases of later extra-uterine pregnancy, with a living fœtus and without any special sign of imminent danger, I would choose whenever practicable the most convenient date in the ninth month on which to operate. I would not wait for any sign of spurious labour or seek after exact correspondence with the natural term, but I would endeavour to perform the operation under the best conditions for both lives concerned. Again, occasionally, here and there, a case of ruptured tubal pregnancy or of tubal mole with peri-tubal hæmatocele recovers without operation, and the fact must be recognised and dealt with. I have seen five or six cases of such recovery, and there could be no doubt of the genuineness both of the disease and of the recovery; indeed, in one of these cases, as we have seen, the rupture in the tube and the traces of the old hæmatocele were plainly visible on opening the abdomen some two years later. If my own experience can be regarded as at all general or typical, this would give a proportion of about 5 per cent. of all cases observed which may be expected to terminate by process of natural recovery. Is there anything to mark these cases out from all the rest? Not much, I think, for the swelling of the tube, followed by the further tumour of the hæmatocele, the acute attack of abdominal pain and the peritonitic sequel, may all be quite as marked as in the majority of cases. But if the case recovers without operation the pregnancy is usually destroyed by the first (and only) bleeding, and the hæmorrhagic discharge from the uterus, which during the period of abdominal hæmorrhage and pain has probably been irregularly abundant, absolutely ceases with the definite termination of the pregnancy and beginning of absorption, and the patient becomes free from pain. Under these circumstances—cessation of growth, cessation of hæmorrhage, cessation of pain—notwithstanding the pelvic tumour of the distended tube and hæmatocele—it may be right to withhold operation and give the patient, by rest in bed, by a liberal but non-stimulating diet, and by attention to all excretory functions, an opportunity of natural cure. It is worthy of note, however, that this natural cure is rarely very satisfactory, and that it contrasts somewhat unfavourably with operative methods. It requires many weeks or even months of rest for complete absorption to take place, and at the close of the process the distortion and fixity of adjacent organs (due to the prolonged presence of the hæmatocele) may still be marked and possibly permanent. In some cases, too, the fœtus may have arrived at a stage of development in which complete absorption is impossible, and if so, although apparent recovery should follow, there may be no finality about it. Months or years afterwards suppuration may occur about the retained fœtus, and the evils connected with this prove very much greater than those encountered at the earlier disturbances. Finally, in all cases the danger of waiting—the danger of temporising when any symptom of collapse or pain is present—should be thoroughly recognised and appreciated. So far as we know at present, if 5 patients may possibly weather the storm by months of rest 95 patients will die if surgical aid is withheld. Now, what is the prospect or prognosis after surgical treatment? In my own series of cases 37 cases of all kinds are reported with 36 recoveries and 1 death. In Mr. Tait's list published in 1888 we find 42 cases with 40 recoveries and 2 deaths, and in Mr. Mayo Robson's cases recently reported 23 cases with 22 recoveries and 1 death. I have some reason to know that while these results are all very good they are not specially exceptional. If I turn to the statistics of the chief hospital with which I am connected, the Birmingham and Midland Hospital for Women, I find in the decade from 1886 to 1896 that 62 cases of ectopic gestation were operated on with 61 recoveries and 1 death; and smaller series of cases are being frequently reported in the medical journals, none of which show any high mortality. The mortality of all cases is not probably more than 5 per cent.

The operative treatment of extra-uterine pregnancy may be considered under two divisions—viz.: (1) operations in the earlier half of pregnancy; and (2) later operations. (1) In the first we must consider—operations for diffuse hæmorrhage and operations for localised tumour, either an intact pregnancy or hæmatocele; and (2) in the second division we shall have to deal mainly with the operative delivery of the mother at or beyond the period of term under tubo-abdominal and tubo-ligamentary pregnancy.

1. Operation for diffuse hæmorrhage may be required in—(*a*) early rupture of the tube; (*b*) later rupture of the tube; (*c*) intra-peritoneal rupture of broad-ligament pregnancy; (*d*) rupture of a peri-tubal hæmatocele; and (*e*) rupture of a tubo-uterine or interstitial pregnancy. The operation here will of necessity involve abdominal section. It will be an operation of emergency. It will have to be done at the patient's home—very possibly at night—under uncomfortable conditions and often without skilled assistance. None of these difficulties must be allowed to excuse any laxity in surgical asepsis, and therefore the operator must himself be prepared to act as his own chief assistant, and by order and method reduce his dependence on others to a minimum. Some kind of operation table is an absolute necessity, for the abdominal cavity will need washing out with warm water. Plenty of boiling water must be available. The operator arranges his portable steriliser, his instruments and his sterilised pads (some of which should be of large size) within easy reach of his right hand so that he can help himself to anything he wants. No time must be lost. When the diagnosis has once been made the operation must be performed at the earliest possible moment consistent with a prepared and cleanly *entourage.* While the patient is passing through the later stage of narcosis the abdominal wall is carefully cleaned with soap-and-water and afterwards with methylated spirit. The incision—made in the middle line—will probably at once disclose some confirmation of the diagnosis, the black colour of the blood within the abdomen showing darkly through the transparent peritoneum. On opening this blood and blood-clot pour out freely. The fingers of the left hand are inserted into the abdomen, seize the uterus, and feel at once for the site of pregnancy, the source of bleeding. If, as usually happens, this can be identified by touch it is immediately withdrawn out of the abdomen, the parts below the tube being firmly held so

as to stop any further bleeding. The operator then—with his disengaged right hand—takes the needle armed with ligature silk from the steriliser, transfixes the broad ligament below the tube with Staffordshire knot or linked double ligature, ties off the pregnant tube and finally removes it. The abdomen is now thoroughly washed out with blood-warm water, the pelvis is specially cleared of blood-clot, a drainage tube is placed in the pouch of Douglas, and the abdominal incision is closed. After the wound is dressed a binder is applied tightly round the abdomen, and if the patient be nearly pulseless she is placed in bed on an inclined bedstead with the lower extremities raised.

The operation itself is often an easy one, but there are difficulties which may interfere with its ready performance. The most important is the impossibility of seeing what one has to do. The blood continues to well up from the pelvis, and vigorous sponging may only afford momentary glimpses of the pedicle or broad ligament. In this case pouring clear warm water over the wound and packing some of the larger pads into the pelvis and round the affected tube will often prove of service. Sometimes this difficulty of vision has a more serious bearing. If the pregnancy has already escaped from the ruptured tube it may be no easy matter to detect which is the affected side and where is the source of the hæmorrhage. Under these circumstances the temporary control of the circulation with one or two pairs of Doyen's lighter elastic forceps will allow of the washing out of the abdomen and enable the operator to search for and to find the tubal rent without fear of further loss while the search is still in progress. I always take these forceps to any abdominal operation of emergency; their pressure can be nicely adjusted so that intestine even need not suffer any injury in their temporary grasp, while the higher grades of pressure are sufficient to control the broad ligaments in a case of hysterectomy. Occasionally, when a ligature is difficult or impossible to place, a pair of these forceps may be left on the broad ligament or on the side of the uterus at the close of the operation. A compression of from eighteen to twenty-four hours is usually sufficient. In diffuse hæmorrhage from the rupture and extrusion of a tubo-ligamentary pregnancy the temporary or more lasting use of forceps may be of signal service. The bleeding points may be entirely hidden, furnished largely by branches of the uterine artery; and this or firm plugging with iodoform gauze may be the only way of arresting the hæmorrhage. In tubo-uterine or interstitial rupture with diffuse bleeding—a condition in which surgery has still to win its laurels as victor—the quick recognition of the condition on opening the abdomen will be the first element of success, and the rent on one side in the upper part of the uterus and the different levels at which the tubes appear to enter the uterus should guide the operator to a quick decision. In this case the uterus should be drawn out of the wound, two transfixion pins passed, first through the peritoneum on one side of the incision, then through the uterus well below the tear, and finally through the peritoneum of the opposite side (as in the method described by myself in 1893), a "wire-clamp" applied below these, and the latter screwed thoroughly "taut." The hæmorrhage is then absolutely controlled, and if the clamp be always ready for use the time occupied in effecting this control need scarcely be longer than that which has been used in briefly describing the method. The operator can wash out the abdomen through the upper part of the incision above the clamp, doing this carefully and thoroughly, and if drainage be considered necessary the tube can be adjusted at the upper angle of the wound. When the latter is closed the clamp is again screwed up tightly, the parts above the clamp are cut off, and the stump is surrounded with iodoform gauze. The only caution necessary to mention is the danger of any slipping of the broad ligament out of the grasp of the wire before the latter is finally tightened. This is easily avoided by transfixing the broad ligament with the pins or by holding up the appendages with forceps (if these are removed) and by screwing the clamp thoroughly tight before the parts above the wire are finally removed.

Washing out of the abdomen in a simple case of diffuse hæmorrhage, as in early rupture, can often be done by pouring water from a jug directly into the abdomen, but in such a case as I have been considering, and in a patient with a deep pelvis containing much blood-clot, the use of a syphon tube is more handy and more efficient. By this the stream of water is carried directly to the lowest part of the pelvis, and the upward returning stream washes out the blood-clot. This "washing out" should never be omitted in cases of diffuse bleeding. Besides cleansing the peritoneum it is probably a means of conveying some fluid into the depleted blood-stream, and this, followed (after the operation is over) by a nutrient injection containing brandy, and by temporary elevation of the pelvis and lower extremities, is, in my opinion, more useful in overcoming shock and in restoring the pulse than is any attempt at transfusion.

In diffuse hæmorrhage the quickest and directest route to the bleeding vessels is an absolute *sine quâ non* of operative treatment, and there can be no doubt that this is attained by abdominal section above the pubes. In localised hæmatocele and in intact extra uterine pregnancy up to mid-term, other methods of operation may be employed besides abdominal section, and we shall have to consider vaginal section under its two aspects of posterior and anterior cœliotomy and also the sub-peritoneal incision in cases of anterior tubo-ligamentary invasion. In true retro-uterine hæmatocele, in which the pouch of Douglas is itself distended with blood, posterior vaginal cœliotomy—the direct opening of the pouch of Douglas from the vagina—is obviously the proper method of treatment, and no surgeon would probably dream of any other. Under this condition the operation is very simple. A free incision is made in the middle line, the contained blood and blood-clot are gently washed out by a stream of warm water carried within the cavity, nothing is done to interfere with the upper limiting adhesions or roof of the hæmatocele, and after free evacuation the pouch is drained by a tube or by iodoform gauze. In peritubal hematoceles which occupy the whole or a greater part of the pouch of Douglas an extension of the same method may be employed with advantage, especially if the bulk of the swelling be evidently within the pouch of Douglas. In this case, however, every aseptic precaution is just as necessary as in an abdominal section, and before beginning to operate the hair of the vulva is shaved and the vulva and vagina are thoroughly cleansed and disinfected. For this and for the subsequent operation the patient is placed in the "lithotomy" position on a good table, and the vagina is kept open by the valuable self-retaining speculum of Auvard. The surgeon sits facing the vulva of the patient, and there should be a good light directly behind his head. The patient is anæsthetised previously, and is therefore unconscious before any of this preparatory work is begun.

Operation.—The uterus is steadied by volsella applied to the posterior lip of the cervix and the posterior vaginal vault is opened behind the uterus with scissors curved on the flat. On reaching the pouch of Douglas blood and bloody serum will probably be found within it. There are, as a rule, no adhesions at the lowest part of the pouch. On inserting the fingers the tumour of the hæmatocele will be plainly felt, and all the lower part of it may be very thoroughly explored, especially if the disengaged hand be placed on the abdomen above the pubes and the examination of the mass be conducted "bimanually." During this examination the blood-clot is usually broken down and the main part of the hæmatocele is cleared away by the vaginal opening. This may be assisted by irrigation from within the pouch of Douglas if the opening be very free and the return current unobstructed. If not it may be wise to restrict oneself to manual or digital removal only. During the process the remains of the pregnancy itself, fœtal and placental or molar, may be evacuated, and sometimes the tube containing a mole of pregnancy may be detached from its adhesions, brought outside, ligatured, and removed. It is, however, rarely necessary to do this or to strive after this unless hæmorrhage be still going on. If the pouch of Douglas be thoroughly plugged and drained by a thick pledget of iodoform gauze after the hæmatocele is broken down and cleaned away nothing more is needed to ensure the conditions essential for the safe and complete recovery of the patient. A few cautions may be necassary with regard to the conduct of this simple operation. It should be an operation of election for certain cases—those are most favourable for its employment in which the vagina is capacious and the tumour is mainly posterior to the uterus. The bladder should be thoroughly emptied immediately before the operation is begun. No violence should be used, the blood-clot and débris should be extracted gently. The gauze drain should rest one half within the peritoneal cavity and the other half in the upper part of the vagina, and no portion of it should protrude or be visible at the vaginal entrance. The urine is better withdrawn by the catheter until the drain is removed on the fourth or fifth morning. Two rare but disquieting accidents following the operation are hæmorrhage and severe sacral pain. After a posterior vaginal incision, whether in this operation or in vaginal hysterectomy, it is quite possible to get severe, dangerous or even fatal hæmorrhage. The farther away the incision is from the cervix, the greater appears to be the danger. Plugging is quite sufficient to stop the ordinary bleeding, but in some cases sutures are absolutely necessary. In introducing the tampon of gauze, it is important to avoid pushing the peritoneum in front of the gauze and thus opening up the sub-peritoneal (raw) tissues. Severe temporary sacral pain is a very exceptional sequel to operation, but I have met with two cases in which it was a special feature. I am inclined to think that this is excited by the dragging of the uterus on the partially divided utero-sacral ligaments (or muscles) and that a median antero-posterior opening (when practicable), or a free transverse incision may be preferable to a smaller transverse opening.

Anterior vaginal cœliotomy or, as it is sometimes called, "anterior colpotomy" has been extensively used during recent years in the treatment of peri-tubal hæmatocele due to tubal pregnancy. The vaginal vault is opened between the uterus and bladder, the vesico-uterine fold of peritoneum is divided, and the fundus is drawn forwards by volsella out of the abdomen through the opening thus made. The uterus and uterine end of the tube on either side are then under the complete control of the operator, and the tube together with any contained pregnancy can, as a rule, be ligatured and removed without much difficulty. But the space in which one has to work is cramped and confined, and while the tube may be easy to remove it is not so with the hæmatocele. This often separates from the tube with traction on the latter and it may be very difficult or impossible to remove it afterwards. Some operators appear to regard this as quite immaterial and leave a considerable quantity of blood and blood-clot in the pelvis and abdomen at the close of the operation, providing no drainage, but trusting solely to the absorptive powers of the peritoneum itself for its removal. If the operation has been performed with perfect cleanliness this confidence may be rarely misplaced as regards the final result, but the patients do not recover easily, there being often considerable pyrexia for several days before convalescence is thoroughly established. The main objections to anterior vaginal cœliotomy as a routine method of treatment are the following: (1) occasional insufficient space for operative work; (2) frequent inability to remove thoroughly and cleanly all products of the misplaced pregnancy; (3) inability to wash out the abdomen satisfactorily; (4) inability to drain through the anterior opening; and (5) occasional inability to extract the uterus without injury, the uterus being enlarged and softened by the changes consequent on the associated pregnancy. It may be noticed that most of these objections will lose a great deal of their importance if the operator, the patient, and her friends be prepared and ready to accept the possible sacrifice of the uterus in the course of the operation. If the uterus be already diseased or damaged, justifying its removal as an initial step, the space and opportunities thus acquired are ample for all ordinary requirements; there is room for thorough and careful work, the pregnancy and hæmatocele can be completely removed, the pelvis and lower abdomen may be washed out. and at the close of the operation the most perfect drainage of the pelvic peritoneum can be established by the adjustment of a well-fitting plug of iodoform gauze.

It is, of course, of considerable advantage to the patient to be able to relieve her of her disease without making an abdominal incision and especially so in cases where drainage is a desideratum, abdominal drainage being frequently followed by hernia. But I am inclined to think that abdominal section, in spite of this drawback, is still the better operation, or rather the better route for operative work in every case in which a posterior colpotomy is inapplicable or insufficient. By abdominal section the extent and connexions of the hæmatocele can be accurately explored, the limiting adhesions to omentum and intestine can be carefully separated or broken through, and the whole of the operation from beginning to end can be performed under the most favourable conditions for manipulation and cleanliness. When operating by the median incision the diseased tube must be thoroughly defined, ligatured, and removed. It will often have to be unrolled from the back of the uterus after the main tumour of the hæmatocele has been taken away, but the adhesions are almost always light and easy to separate. The adhesions of the hæmatocele-capsule to bowel and omentum are, on the other hand, often especially intimate, and when this is the case it is better practice to leave a considerable portion of the hæmatocele-capsule adhering to bowel than to make any attempt at their separation.

Sometimes a lateral inguinal incision may be of service. It is quite possible to treat a large lateral hæmatocele—such as that depicted in Fig. 37—in this way, without removal of the tube, and with but very little or no disturbance of the general cavity of the peritoneum. An incision is made above the groin, opening directly into the hæmatocele and pregnancy. The contents are removed without disturbing surrounding adhesions, and the cavity is packed with iodoform gauze.

A very similar method is advocated by Dr. Berry Hart for the treatment of anterior tubo-ligamentary pregnancy at mid-term and may be followed with advantage whenever the conditions permit of its application. In this pregnancy, as we have already seen, the anterior layer of the peritoneum is raised, and at mid-term as well as at a later stage there is a space either mesially or above the groin on one side which is uncovered by peritoneum This can be accurately defined by a preliminary incision in the middle line which opens the abdomen. When this has been done a direct incision is made into the sac of pregnancy below the peritoneal reflexion. This extra-peritoneal wound should be large enough to admit four fingers. The fœtus is removed at once, the sac tamponaded with iodoform gauze, and the placenta allowed to separate and come away slowly with the discharge.

In tubo-abdominal pregnancy at term there is no difficulty in the removal of the child by an abdominal incision. The crux of the operation is the treatment of the placenta. If this be left, sooner or later it will almost certainly become septic and putrid, and I have come to the conclusion—contrary to the opinion I formerly held—that in all cases of true tubo-abdominal pregnancy it is wise to remove the placenta. A clear idea of its probable relations and attachments will, I feel sure, do much to make this part of the operation easier and to rid it of much of its otherwise alarming features. Wherever the placenta is, there is the Fallopian tube, and it is from this it receives the greater portion of its blood supply. As we have already seen, sometimes the placenta is still within the tube, absolutely surrounded everywhere by tube, and nothing can be easier than to ligature it off and ensure its complete removal without any loss of blood. When it is within the gestation-sac and mostly covered by reflexions of the amnion, no method, I think, can be better than that I employed in the case (No. 33) already reported under this heading. Accessory vascular attachments to the omentum or abdominal wall are first ligatured and divided, the placenta is slightly tilted up at the most accessible part of its circumference, and forceps are used to clamp its tubal attachments below. The placenta is then removed and the tubal attachments are subsequently ligatured. The most difficult and dangerous form of attachment is that when the amniotic membrane only lines the upper surface of the placenta and all its under surface is attached not only to the tube and broad ligament but also to the parts adjacent (the condition found in Case 3). Still in this case a modification of the plan already described will afford the best chance of success. Sometimes the deeper attachments (uterus and broad ligament) may be seized before separation by the fingers of an assistant. If not, the most accessible route to the under surface of the placenta is searched for and separation is begun. As soon as possible the tubal and uterine attachments are clamped by the lighter elastic forceps of Doyen, the placenta is peeled off and two or three large sterilised pads are packed into the cavity from which the afterbirth has been removed. Ligatures are applied to the broad ligament and tube, and wherever it is possible by so doing to control the bleeding. Where these are useless packing with iodoform gauze will prove, I believe, the best alternative method for control of hæmorrhage. When this is necessary, if the original abdominal incision—probably mesial—be decidedly to one side of the placental site, it will be wise to finish the operation by making a secondary abdominal incision immediately above the gauze, from which the packing may be readily removed some four or five days later. The very rare condition when the child is abdominal and the placenta intra-ligamentary belongs to a very different category. From a surgical standpoint this pregnancy remains tubo-ligamentary throughout, and is governed by the same laws of treatment which apply to tubo-ligamentary pregnancy.

In tubo-ligamentary pregnancy there is no necessity for the operative removal of the placenta. If the sac be drained the placenta will itself separate and come away with the discharges. This usually takes place without any pyrexia or constitutional disturbance. Let us take the simpler form of tubo-ligamentary pregnancy first—the posterior or retro-peritoneal variety—and consider the operation necessary for its relief. In this the peritoneal cavity is always opened by the abdominal incision. Within the abdomen, full and bulging like a pregnant uterus, is the sac of pregnancy. This is opened by an incision directly underneath the abdominal wound, the edges of this are held against the edges of the abdominal incision, the child is extracted, and after ligature and division of the cord is entirely removed. Now it may be possible to remove the placenta with safety from the interior of the sac, especially when the infant has been dead for weeks or months, and by so doing, if no serious hæmorrhage is occasioned, convalescence may be very much shortened. If there be any doubt, however, if the placenta be full of blood and firmly attached, no interference is necessary. The incision in the sac is sewn to the abdominal wound, the cord is left hanging out of its lower angle, and the sac is drained. I am aware that many modern writers have advised a much more radical and sweeping method of treatment. Dr. Dunning, in the case I have already quoted, proceeded to extirpate the sac, and very naturally, as anyone who studies the specimen depicted in Fig. 22 will easily understand, had to complete his operation by removal of the uterns. Fortunately the patient recovered, but I cannot agree with the practice adopted. It is altogether unnecessary, and any temporary advantage secured by it is dearly purchased at the cost of increased danger and extensive mutilation. In the similar case reported by myself (Case 4) and treated by the simpler method of drainage, the patient not only made a good recovery but has since had a normal pregnancy with safe delivery of a healthy child. In the anterior or sub-peritoneal-abdominal form of broad ligament pregnancy the same remarks apply, but the sac may sometimes be opened at a part uncovered by peritoneum. If some part of the child is obviously almost subcutaneous (and that is most likely to be found on one side of the middle line) the sac may be opened at once and the operation of removal of the child and drainage of the sac conducted without opening the abdominal cavity or seeing the peritoneal membrane. More frequently, perhaps, if the incision has been median, the peritoneal cavity will be opened at the beginning of the operation. If so the displacement of the peritoneum can be accurately estimated (as in the operation for mid-term ligamentary pregnancy) and a secondary incision can be made directly opening the sac, through which the child is removed and drainage established. The mesial exploratory incision is closed by suture.

Now we can return to the consideration of the complicated form of pregnancy in which the child is abdominal and the placenta intra-ligamentary. The main indication in this form would be, as I believe, to convert the complex "tubo-ligamentary-abdominal" pregnancy into a simple tubo-ligamentary one. After the fœtus has been removed this may, perhaps, be effected by sewing the laceration of the sac to the abdominal wound. If the opening in the sac be inconveniently situated for this the (divided) cord may be dropped inside the sac, the edges of the laceration turned in, and the abdominal opening in the sac closed by suture. Then, either before or after closure of the abdomen, a large opening is made by vaginal section into the most dependent part of the sac, the cord is drawn down into the vagina, and the rest of the wound and the lower part of the sac are plugged with iodoform gauze.

Finally, "utero-abdominal" pregnancy may demand very similar treatment or hysterectomy. The abdomen is opened, the cord is ligatured and divided and the fœtus is removed. Then, if the cervix be dilated or sufficiently dilatable. the divided cord may be returned through the utero-abdominal opening into the uterus and through the cervix out into the vagina. The placenta is delivered after it by manual expression and the opening in the uterus is "freshened" and sutured.

If this is impossible or deemed at the time to be inadvisable, the other alternative is to remove the uterus with its retained placenta. This may be done either by clamp or ligature, but the latter is preferable. In this condition there will probably have been no previous hæmorrhage, and if it be necessary to sacrifice the uterus, there is no reason against its complete removal by the modern method of abdominal hysterectomy.

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EXOPHTHALMIC GOÎTRE.*

BY FRANK OLIPHANT, M.B. EDIN.

Exophthalmic Goître is a disease characterised by disturbance of the vascular system, enlargement of the thyroid gland, protrusion of the eyeballs and tremors, associated with disturbance of mental equilibrium, emaciation, sweating, diarrhœa, anæmia, and catamenial derangement. Synonymous terms are Graves' disease and Basedow's disease. It was first described by Hillier Parry in some private writings, in 1796, which, however, were not published till 1825. Meanwhile Flajani, a physician in Rome, had published a case in 1802, and cases had been described anonymously in the *Medical and Chirurgical Journal* in 1816, and in the *New England Journal* in 1820. Graves published the first case in the *London Medical and Surgical Journal* in 1835, while v. Basedow followed him five years later (1840) in *v. Casper's Woche.* There are two forms of the disease—the acute and the chronic. The former variety is rare, but a number of cases have been recorded at various ages, the attacks having lasted for a few days to some weeks. The prognosis in these cases is usually good, as the symptoms run their course without leaving any permanent injury, but death may occur from exhaustion. The chronic form is the ordinary variety of the disease, and the one which is therefore of the most interest and importance. The chief predisposing causes of the disease are:—

1. Sex.—In this country by far the larger number affected are females. In Ord and Mackenzie's statistics there are only 5 males affected to nearly 100 females, but abroad the difference does not seem to be so marked, as in Germany Eulenberg gives the proportion as one male to two females, while Charcot says that it is only a little less frequent in males than in females in France.

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2. Heredity is also a factor to be taken into account. In most cases there is a distinct taint of nervous disease, either functional or organic, in the family history, and the patient may previously suffer from organic nervous disease, such as locomotor ataxia or progressive muscular atrophy, or from hysteria. Cases of the disease in the same generation in different members of a family have been recorded. Three sisters affected (Hughlings Jackson), four cases in one family (Cheadle), and in successive generations two sisters, their father, and two of his sisters and their mother (Mackenzie). A hysterical woman had ten children, of whom eight suffered from the disease, and one of them had three children who suffered from it (Osterreicher). A mother aged 45 years, and her daughter aged 12 years, had the disease at the same time (Kronthal).

3. Goître has been observed by Maude and Mackenzie to precede the disease in a certain proportion of cases. It is occasionally the first symptom observed by the patient. Other observers have stated that Graves' disease and goître rarely occur in the same district. There are no statistics to support this statement, but the disease is certainly rare in Switzerland and India, where ordinary goître is common.

4. Quinsy, rheumatism, and a hæmorrhagic tendency have all been observed to precede the disease in a certain number of cases. The exciting cause is in most cases a sudden mental shock, such as a fright or the receipt of bad news or prolonged mental worry. Cases have also followed scarlatina and influenza.

In many cases the disease comes on insidiously, and there is absolutely no history of any exciting cause. Many observers hold that the disease always commences thus gradually, and that a shock received leads to an exacerbation of the symptoms, and is not the actual cause ot the disease.

The four cardinal symptoms of the disease are—tachycardia, enlargement of the thyroid gland, exophthalmos, and tremor. In a typical case these are all present, but many cases occur in which one or other is absent. To these must be added many other symptoms involving the various parts of the body, which can be best explained by taking the various systems separately and describing the conditions by which they are affected.

Circulatory System.—In the large majority of cases the tachycardia, with its accompanying palpitation directing the patient's attention to it, is undoubtedly the first and most prominent symptom of the disease; that the palpitation should attract the patient's attention first is easily understood. It is often very forcible and painful, and can be seen and heard a long way off from the patient. Rarely the præcordia may not be the site of forcible pulsation. I have lately seen a young girl whose abdominal aorta and other abdominal vessels were bounding violently, causing a most wearying and dragging-down sensation, while the heart was relatively quiet. There are usually bruits, systolic in time, at one or more of the valves of the heart, due to concurrent anæmia or to dilatation; there may be bruits of organic origin. The pulse-rate varies from 90 to 200 per minute; it is usually regular, except in the later stages when the heart is losing strength. The palpitation is conducted from the heart up into the arteries of the neck and the thyroid gland, over both of which a loud systolic bruit is to be heard. A venous hum is usually heard in the jugular veins due to pressure on them by the enlarged thyroid gland or to anæmia. The face and chest are frequently very flushed. A capillary pulse may often be seen.

Hæmorrhages have been observed; epistaxis is the most usual. Hæmatemesis and melæna are sometimes seen. Trousseau records a death from cerebral hæmorrhage, and others have reported signs of recent or past hæmorrhage in other parts of the nervous system.

Anæmia is a frequent concurrent symptom, though by no means always present. No special changes have been found in the blood.

Œdema, in the early stages from anæmia, in the later stages from cardiac insufficiency, is seen.

Hæmopoietic System—The thyroid gland is usually moderately enlarged, smooth in outline and elastic in consistence; it is only rarely that the gland causes any inconvenience by its size. In most cases the right lobe is slightly larger (Mackenzie thinks that the right is normally larger than the left lobe); but one lobe may be much larger than the other, or the isthmus may alone be hypertrophied. There is a distinct tendency to variation in size in the same case. Rarely the gland becomes so hypertrophied as to press on the trachea and require operative relief. On palpation a thrill can be felt; this is not expansile, but is due to conduction of the heaving of the thyroid arteries. On auscultation a systolic murmur is heard, also conducted from the arteries.

Besides the thyroid gland the thymus has been found to be enlarged in a large number of subjects examined *post mortem*. The spleen is also generally enlarged and sometimes pulsating. The lymphatic glands may be enlarged.

The Eye is affected by various symptoms. Exophthalmos or protrusion of the eyeballs forwards is a fairly constant symptom, and one most easily recognised. A rim of white sclerotic can often be seen all round the cornea. It is usually bilateral, but is as a rule not perfectly equal. It is sometimes so great as to prevent the lids from closing, and thus leads to dryness and insensitiveness of the cornea and consequent ulceration from inability to get rid of foreign particles which may alight on its surface. The ulceration once in progress is apt to prove obstinate to treatment and lead to total destruction of the eye.

v. Graefe's symptom, a want of co-ordination in the movements of eye and eyelid, so that the latter lags behind when the former is rotated downwards, as on looking down to the ground, is present in the majority of cases; but different opinions are held as to the proportion of cases in which it does occur, owing, I think, to the fact that it is by no means a constant symptom. I have noticed that it may disappear for a time and then reappear.

Stellwag's symptom, a deficiency in the power of winking, and Dalrymple's sign, enlargement of the palpebral fissure, are also present in a large number of cases. V. Joffroy's symptom, inability to contract the frontalis muscle when the eyebrows are suddenly raised, is not often met with. Other unusual symptoms are loss of powers of convergence of the eyes, ptosis, and strabismus from paralysis of one or more of the ocular muscles. Complete ophthalmoplegia is rarely seen. The state of the pupils is inconstant; they are more often contracted than dilated.

The exophthalmos has been ascribed to two causes—(1) excess of post orbital fat; such has been found in some cases on *post mortem* examination, but in the majority there has been none found, and considering that the rest of the body is as a rule emaciated, this hypothesis is improbable; and (2) dilatation of the retrobulbar vessels—the most tenable hypothesis, as the vicinity contains a large number of dilated vessels; "and an acute attack of diarrhœa reduced the exophthalmos, which returned when the diarrhœa ceased" (Abram). The exophthalmos also disappears after death. Experimentally, and as a means of treatment, section of the cervical sympathetic has been shown to cause a decrease in the exophthalmos. This supports the last theory. The other eye symptoms appear to have a nervous, but at present indefinite, origin.

Locomotory System.—The chief motor symptom is a characteristic tremor, chiefly affecting the arms, but may affect the whole body. It is exactly similar to the tremor of fatigued muscle, consisting of fine vibratory excursions, about eight to the minute, and best seen when the arms are extended in front. There may be in rare cases clonic contraction of the limbs. A weakness of the legs, leading to stumbling, is very common, the patient usually recovering herself before she actually falls. Hemiplegia and paraplegia have been met with; they are usually functional in character, or due to weakness. There may be ataxia also functional in character. Cramps in the muscles are of common occurrence, but are usually temporary, though tetany may supervene.

Integumentary System.—Vaso-motor disturbances of the skin, especially that of the head and chest, are the rule, and are very noticeable, as between the flushings the skin has usually an extreme pallor. With these there is a subjective sensation of heat, and the sufferers from this disease complain of heat, even in the coldest weather. Sweating is also very marked, more especially of the hands and feet; there may be urticarial eruptions. Pigmentation of the skin is present very frequently, Cardew says in 70 per cent. There may be general bronzing, similar to that in Addison's disease, or patches of pigmentation, especially marked on the eyelids and in the flexures of the limbs. Patches of leucoderma are occasionally seen. Scleroderma has been described. A fleeting œdema is sometimes seen, most usually in the eyelids, from which it may be dispelled by electrical stimulation of the orbicularis (Mackenzie). Œdema of the feet occurs, as has been previously mentioned (*vide* Circulatory System). A false œdema, which does not pit on pressure, and is similar to that in myxœdema, is sometimes seen. This œdema was first described by Basedow. The hair frequently becomes dry and brittle, and falls out. The teeth are apt to become carious.

Respiratory System.—Nervous cough is frequent. Dyspnœa is common, it may be due to the following causes: (1) a nervous origin, similar to that seen in athyroidea; (2) a mechanical origin, from direct pressure of an enlarged thyroid on the trachea; and (3) a cardiac origin, from gradual failure of the heart and consequent pulmonary engorgement. There is a physical sign of rather doubtful significance and certainly not of common occurrence, a deficient expansion of the chest on full inspiration—it is known as Bryson's symptom. Bronchitis and pneumonia are frequent complications in the later stages, often leading to a fatal issue. Tubercle of the lungs is rare (Greenfield).

Digestive System.—Appetite may be capricious, with longings as in pregnancy, or lost. Attacks of vomiting and diarrhœa of a severe and continuous character and bearing no relation to the ingestion of food are present in all well-marked cases; they are similar in character to the like crises in locomotor ataxia, and hence probably of nervous origin. I have a case under observation at the present time in which these gastric crises were one of the first symptoms observed by the relatives, and throughout have been a prominent symptom; the vomiting has never in her case been accompanied by diarrhoea. Acetonaemia is often present in these attacks, as Dreschfeld has pointed out; it may be detected by the sweet smell of the breath and the presence of diacetic acid in the urine. With these attacks of vomiting there is restlessness, prostration, and air-hunger as in diabetic coma.

Genito-Urinary System.—Albuminuria, first described by Warburton Begbie in this disease, is of an intermittent cyclical character, appearing and disappearing, and often present only at certain periods of the day. Polyuria and glycosuria occur, but infrequently. Catamenial derangement, usually amenorrhoea, is the rule. In males, sexual impotency has been observed. But females with this disease have become pregnant, or the disease has started during pregnancy or the puerperium.

Nervous System.—Mental change takes the nature of an extreme excitability and restlessness with what Russell Reynolds has named "a chorea of ideas," the patient not being able to concentrate her attention on a definite subject. Insomnia and great nervousness are common. The moral nature is often perverted, so that the patients become untruthful and perverse. Actual insanity is rare; when it does occur it is usually a mild form of mania, but melancholia occasionally occurs. Some cases are never troubled with any mental symptoms. Headache is usual with throbbing of the cerebral arteries. The tremors and paralyses have been previously described (*vide* Locomotory System). Reflexes are usually brisk (Mackenzie).

The four symptoms of tachycardia, goître, exophthalmos, and tremor, well marked in typical cases, render the diagnosis easy and certain; but in slighter cases, where all these symptoms are not present, it is more difficult. A slight goître is very commonly present in young girls, who may at the same time suffer from an irritable and rapid heart. Such cases require to be kept under careful observation for a time; they may gradually develop the other symptoms of the disease. But there undoubtedly appears to be an incomplete form of the disease in which the circulatory system is primarily affected, and which may be readily passed over unrecognised owing to disease remaining *in statu quo*.

The prognosis is undoubtedly bad. Relapses are common. Mackenzie considers them to be exacerbations of quiescent disease. Gowers quotes a case that had three attacks at several years' interval. Another case mentioned by Trousseau had six attacks in the same number of years. Out of 57 cases collected by Williamson and Mackenzie 14 died. Under suitable treatment the patient may be kept in a fair state of health for years. Again, the disease itself seems liable to undergo a retrogression without any obvious cause, even in the worst cases. Death takes place suddenly from syncope or asphyxia from pressure of the goître on the trachea through sudden increase in the size of gland, supposed by some to be due to hæmorrhage into its substance, but it is more probably brought about by nervous causes acting on the larynx, as the trachea is rarely greatly occluded. The gastric and enteric crises often lead to exhaustion and syncope. A large number of cases are carried off by intercurrent bronchitis and pneumonia, to which they seem specially liable. Some die of organic heart disease. A few die of mania in asylums, but the number is small, considering the slighter mental changes that are the rule in the disease. A certain number of cases undoubtedly develop myxœdema; the two diseases may run concurrently.

The pathology of the disease is obscure. The first theory, propounded by Graves and Stokes, was that the disease was primarily of cardiac origin, the other symptoms being secondary. Marshall and Taylor next claimed that the goître was primary, and that the mechanical pressure of the growth on the nerves and vessels of the neck induced the cardiac and other symptoms. Anæmia was advanced as the primary cause by Warburton Begbie. Then the idea for a long time held ground that the disease was a functional neurosis; the hysterical element being large both in the history of the relatives and patient supports this view, but the disease is evidence of such a thorough disturbance of all the organs and metabolism of the body, and the prognosis is so grave, that this theory has lost practically all support.

It has been largely advocated that it is a disease of the sympathetic nervous system. Against this we have the fact that the various fibres would have to be affected in different ways, *i.e.*, the vasomotor fibres inhibited and the accelerator fibres stimulated, as Gowers has pointed out. One would also expect constant dilatation of the pupil, which is not the case. The sympathetic chain of ganglia in the neck have been found in several cases on *post mortem* examination to be congested, œdematous, and full of leucocytes (Greenfield), but these changes are by no means constant. Recently Jaboulay has carried out in a few cases section of the sympathetic cord in the neck as a means of treatment, with the result that the symptoms were ameliorated if not entirely cured. This lends some support to this theory. For a long time it was held that it was a disease of the central nervous system, and this view still receives a large amount of support *Post mortem* in a large number of cases, various lesions in the medulla and the adjacent parts of the brain have been found, such as softening of corpora quadrigemina and medulla (Mackenzie and Lockhart Clarke), dilatation of vessels and hæmorrhage into medulla (Grainger Stewart, Hale White, and Cheadle), sclerosis (Foxwell), but these changes are very diverse, and have been found in only occasional cases. Experimentally Filehue and Durduff have shown that section of the restiform bodies produced all the symptoms except the goître. A few cases have been observed (Burney Yeo) where the disease has been confined to one side of the body, and in others there have been attacks of hemiplegia and hemianæsthesia. This theory affords no explanation of the enlargement of the thyroid gland, which is the most constant phenomenon of the disease.

Is it a disease of the thyroid gland? Recent researches and clinical experience have done much to support the view that such is the case *Post mortem*, the condition of the gland has been constantly found to be in abnormal state. The discovery of the beneficial result of the treatment of myxœdema by thyroid in various ways led many observers to compare the symptoms of the two diseases and demonstrate how opposite they are in every respect, and how similar the symptoms resulting from excessive ingestion of thyroid are to those found in exophthalmic goître. Operations on cases of goître have been followed by a train of symptoms, often with a lethal issue, closely resembling those found in this disease, and removal of a part or of the whole of the enlarged gland has led to complete recovery in many cases and considerable amelioration in others.

But experiments to show that the secretion of the thyroid is at fault have not met with success. Hutchison gave the various ingredients of a gland removed from a patient suffering from the disease to two females, one with skin disease, the other suffering from obesity, and both under 25 years of age. The proteid free extract was entirely inactive. The colloid caused loss of weight, slight rise of temperature and acceleration of pulse, but no more than the usual doses of normal sheep's thyroid. The colloid given to an athyroid dog produced only slight acceleration of pulse and rise of temperature. The morbid anatomy of the gland is constant. The enlargement of the gland is usually general, but may be nodular. The vascularity is confined to the superficial layers, the veins in the capsule being enlarged and tortuous. On section of the gland the cut surfaces are uniform, paler than normal, and have not the peculiar glistening appearance due to presence of colloid as found in the normal gland. There may be a few small cysts containing clear fluid. Microscopically, the colloid material is absent entirely or present only in small patches. The cubical epithelium has become columnar, and is proliferating, forming small papillary projections into the spaces, and there is proliferation of tubules, so that the gland resembles an adenoma. The spaces are filled with a mucinous fluid instead of colloid. There are newly-formed spaces lined by a single layer of cubical epithelium and resembling sweat glands. Fibrous septa are seen invading the glandular structure of the gland. The nature of the change is a true hyperplasia, and points to an exaggerated, but probably perverted, secretion. The condition of the gland resembles the mammary gland in active secretion (Greenfield).

Thyroidism artificially induced, as in therapeutic thyroid feeding, causes many of the symptoms of the disease, viz., tachycardia and tendency to syncope, restlessness, sweating, vomiting and diarrhœa, and emaciation. And as mentioned previously, operations on the thyroid gland have frequently been followed by a like train of symptoms with sudden death from syncope, probably due, as Paul has pointed out, to absorption of thyroid secretion by the wound or from an excess of thyroid secretion driven into the circulation along the lymphatics by rough handling of the gland during the operation.

In comparing this disease with myxœdema it will be noticed that in place of the enlarged thyroid, tachycardia, restlessness, elevation of temperature and amenorrhœa we have in myxœdema—atrophy of the thyroid gland, a slow pulse, a general lethargy, both mental and bodily, a subnormal temperature, and usually menorrhagia.

Removal of a part of the gland, in order to diminish the secreting area of the gland, on the hypothesis that there is an excessive amount of thyroid secretion formed, has, as has been mentioned previously, been attended with success.

The hypothesis of the thyroid origin of the disease has certainly more to support it than any of the other theories, and is the one most generally upheld at the present time.

The methods of treatment may be classed under four heads:—

1. General hygienic treatment.—Rest in bed for a period is always beneficial whenever the disease is making progress, but the patient is often wayward and very difficult to control; if such should be the case suitable sedatives must be prescribed.

The diet must be carefully attended to, it must be non-stimulating and easily digested. All the excretory organs must be kept in good working order.

2. Drugs.—Belladonna is the most useful of these. It must be given in large doses to ensure its effect; it does good by restraining the action of the heart and probably decreasing the secretory activity of the gland. Combined with the local application of Ung. Hydrargyri Iodid. B.P. to the goître, I have certainly found it diminish the palpitation and decrease the size of the gland. All the patients I have had under this treatment have been hospital out-patients, and have had no other treatment. They have all received decided benefit, but unfortunately have been lost sight of. Digitalis in large doses has been used largely for its tonic action on the heart. The Bromides, Valerian, and Iron have been used on general principles. Phosphate of Soda has been given with great success by Kocher, of Berne, and in America (Carless), as it has been demonstrated by Trachewski, Schiff, and others that there is excessive excretion of phosphates in this disease. I have tried it in several cases, but no improvement has taken place.

3. Electricity.—Galvanic and faradic were each popular at one time and were credited with many cures, but have now fallen into disuse.

4. Organic Extracts.—Thyroid has been given, on the hypothesis that the disease was due to a perverted secretion of the gland. It has been credited with cures. I have had three patients treated with it; two of them, after several weeks' trial, had made no progress; the third, while under treatment, suddenly died from an attack of syncope; all three seemed readily affected by small doses, and the administration had frequently to be stopped owing to the onset of symptoms of hyper-thyroidisation. Thymus gland has also been given with very contrary results. The first case treated was by Owen, of Manchester, who obtained fresh "thyroids" from the butcher. It was not till after the patient was very much improved that he found out that it was the thymus and not

thyroid gland the butcher was supplying. Since this first case he has treated several with good results. Other cases have been reported that have been cured or greatly improved. But Mackenzie has tried it in twenty cases and found it to be absolutely useless in lessening the cardinal symptoms, though the general health is said to have improved. Large doses are often required. Maude records a case in which no effect was produced till a dose of 45 grains three times a day was reached, when steady improvement set in. The use of this gland is based on the fact that it is usually found hypertrophied in this disease *post mortem*; that its most active functional period is in childhood, when exophthalmic goître is almost unknown; and that its secretion appears to possess an inhibiting power on metabolism, as shown by its atrophy after puberty, when growth begins to cease and tissue construction and tissue waste become equalised, and by its hypertrophic state during the hibernating period in those animals which hibernate. I show you a case to-night that I have had under this treatment for the last month. I cannot say that there is any marked improvement yet, but her general health is better, her eyes appear to be less prominent, and v. Graefe's and Stellwag's signs have disappeared.

(This case was treated by thymus gland for three months, the dose being gradually increased up to fifty grains three times a day—B. W. and Co's Tabloids. No further improvement ensued. No bad symptoms were caused by the drug. For another two months she was treated by large doses of phosphate of soda, but without any benefit. She has since been treated with large doses of belladonna. During the recent hot weather her condition has become worse).

Pancreatic emulsion has been used by Dreschfeld with moderate success in alleviating the symptoms. Supra-renal gland has also been used, as its influence on the circulation is opposite to that of thyroid (Abrahams). Spleen has been used in America with varying results.

5. *Operative.*—There are three operations that have been

carried out on the thyroid gland as a method of treatment in this disease. Ligature of the thyroid arteries was introduced by Kocher, of Berne. Removal by excision of half or more of the thyroid gland. And finally, erothyropexy—the laying bare and bringing out of the gland on to the surface of the neck and leaving it in that position, the usual result being thrombosis of the veins and shrivelling up of the gland; this has been done chiefly in France. All these operations have obtained a good proportion of cures, and each has its advocates. But the mortality is fully 12 per cent.; and general opinion is veering round to reserving for operation only cases that are not alleviated by medical treatment and life is being threatened. The most recent operation has been introduced by Jaboulay—division of the cervical sympathetic—he has obtained satisfactory results. Jonnesco, of Bucharest, has completely excised the cervical sympathetic chain, including the ganglia; the result being a speedy relief from all symptoms. These operations are reported to have but little risk attached to them apart from that due to the anæsthetic.

Cases were shown illustrating this paper.

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THE DIFFERENTIAL DIAGNOSIS OF THE DIPHTHERIA BACILLUS.

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THE rapid and sure detection of the diphtheria bacillus is unquestionably of the utmost importance both to the bacteriologist and the clinician, as the diagnosis and treatment of diphtheria have come to depend absolutely upon the bacteriological examination. The old clinical signs and symptoms, upon which but a few years ago the diagnosis was so confidently established, have, one by one, been shown to be hopelessly untrustworthy and misleading.

It is, moreover, of the greatest importance that the diagnosis should be rapidly effected. Experience has abundantly proved the necessity of injecting the anti-toxin serum in the early stages of the disease. The medical attendant can, therefore, hardly be expected to wait longer than 24 hours for the bacteriological report. Unfortunately it would seem that just as the importance of a rapid and certain diagnosis is more and more recognised, the difficulty of making it is increased.

This whole difficulty lies in the separation of the true, or Loeffler, bacillus from the various false or pseudo-bacilli. Although the relationship of these micro-organisms has been the subject of numerous investigations, our knowledge of it is still most imperfect. It is, however, clear that the relation between the two varieties is more intimate, and their distinctive characteristics much less marked than has been generally recognised.

Bacilli which closely resemble the true diphtheria microbe are very widely distributed. Not only are they found in association with the true bacillus, but also in the normal secretion of the mouth and naso-pharynx. These bacilli are also almost constantly present on the conjunctiva, both in health and disease.*

In the disease called Xerosis conjunctivæ, a bacillus is present which closely simulates the diphtheria bacillus. Many authors regard this as the V. Hofmann-Wellenhof pseudo-bacillus;† others, and amongst them Loeffler, Escherich, and Axenfeld,‡ regard it as a specific microbe. Be this as it may, the Xerosis bacillus is one of the micro-organisms which, like the V. Hofmann-Wellenhof bacillus, so closely resemble the diphtheria microbe as to render the diagnosis of the latter a great difficulty.

It is quite impossible merely from the appearance of these organisms to distinguish one from the other. Although generally the diphtheria bacillus is long, slender, and frequently clubbed at one or both ends, and the pseudo bacillus is short, straight, and regular, this is by no means always the case. *The characteristic of the diphtheria bacillus is its great variability!* Now long, now short, now straight, now curved. *Neither by*

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* V. Hofmann-Wellenhof. Wiener Med. Woch., 1888. Loeffler. Centr. f. Bact. Bd. 2., S. 105.

† Schanz. Deutsch. Med. Woch., 1896, No. 18. Peters. Deutsch. Med. Woch., 1897, No. 9.

‡ Berlin. Klin. Woch., No. 9, 1898.

*appearance nor by use of the common staining re-agents is it possible to detect any constant distinction between the two varieties.**

The statement that the pseudo-bacillus grows better and more quickly on serum, glycerine agar, and common agar, and at a lower temperature than the true bacillus (v. Hofmann-Wellenhoff, Escherich, and Loeffler) is, though generally true, not sufficiently constant to allow of a diagnosis being based upon it (Fraenkel*). Nor are the products of the broth and potato cultures more reliable.

Much attention has been paid to the production of acid by the true bacillus, when grown in broth. This fact, first discovered by Roux and Yersin,‡ and more closely studied by Zarniko,|| Escherich,§ and Max Neisser,¶ has been largely made use of as an aid to diagnosis. But although as a general rule blue litmus broth is turned red by the growth of the true bacillus, and is unchanged by the false, yet this is not sufficiently constant to be made use of in diagnosis, *for in a considerable proportion of cases the pseudo-bacillus produces an acid instead of an alkali.* If, however, the amount of acid produced be *quantitatively* estimated, as has been done by Escherich, Max Neisser, Fraenkel, and Peters,** its value is certainly increased. Fraenkel, speaking of it, says that when grown under similar conditions, especially in the same medium, the true bacillus always produces *more* acid than the false. On the other hand, it must be mentioned that Neisser found a Xerose bacillus which produced as much acid as the most typical Loeffler, and Peters makes a similar observation with regard to one of his pseudo-bacilli. Still, as Fraenkel†† rightly points out, its

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* Berl. Klin. Woch., 1897, S. 1088.

‡ Annales de l'Institut Pasteur, 1888, p. 629.

|| Centralbl. f. Bact., 1889, S. 228.

§ Epidemische Diphtherie, Wien 1894, S. 201.

¶ Zeitschr. f. Hyg., Bd. 24. 1897.

** Deutsch Med. Woch., 1897.

†† Berl. Klin. Woch., Bd. 50, 1897.

negative side is undoubted, for there is no case recorded where the true bacillus has produced no acidity.

The hope that it would be possible to distinguish between the two varieties by means of the specific agglutination of an anti-toxine serum has proved fallacious. Both Fraenkel† and Spronk‡ found that both the true and the false bacillus grew readily in the most powerful anti-toxine serum. Thus it is seen that is impossible to distinguish with certainty between the true and false forms from their morphological and cultural appearances, and we are forced back to a consideration of the great fundamental distinction—the production of a virulent poison or toxine.

For the purpose of estimating this, the guinea-pig is selected, on account of its exceeding susceptibility to the diphtheria poison. A small subcutaneous injection (less than ½ c.c.) of a forty-eight hours' broth culture of the diphtheria bacillus is sufficient to kill an adult guinea-pig—the animal dying with characteristic symptoms, in from two to four days. A much larger injection of the pseudo-bacilli produces no effect. But even this test is not free from serious objections, apart from the inconvenience, nay, frequently the impossibility of waiting several days for the result. Every bacteriologist knows how exceedingly variable the virulence of a micro-organism may be, and the diphtheria bacillus is certainly no exception to this rule. Instead of dying within forty-eight hours, the animal may live four, six, or even ten days, and die with the symptoms of exhaustion rather than with those characteristic of the disease. At other times no constitutional effects follow the injection, but merely a slight inflammatory induration at the site of the puncture, even after the injection of five or ten times the amount that is usually fatal.

Nor, on the other hand, is the pseudo-bacillus quite as harmless as might have been supposed. Not unfrequently it causes a local inflammation at the site of the injection. Zupnik* found all varieties of pseudo-bacilli pathogenic to guinea-pigs, causing infiltration of the subcutaneous tissue and necrosis of the skin. At times, severe constitutional symptoms appear (Fraenkel)*. Escherich† says that some of his guinea-pigs, after the injection of the pseudo-bacillus grew markedly thinner, and eventually died. Roux, Yersin, Peters, and many others have observed the same.

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† Hyg. Rundsch, 1896, No. 20.

‡ Sem. Méd, 1897-8, p. 353.

Still more startling is the fact that these micro-organisms possessing little or no pathogenic properties have been so altered by cultivation as to become even as toxic as the true bacillus. Roux and Yersin‡ found that a culture of pseudo-bacillus, which previously had produced only a slight local inflammatory reaction, after injection with a strepto-coccic culture became so virulent that it was impossible to distinguish it from the true bacillus.

Again, Trumpp‖ isolated an undoubted pseudo-bacillus from a case of empyema; the bacillus was quite innocuous to guinea-pigs even in large quantities. He then injected a mixture of the bacillus and diphtheria toxine; and on the death of the animal recultivated the bacillus and repeated the experiment. After a time the bacillus became so altered in its nature that it was able to kill the guinea-pig *without the addition of the toxine;* and henceforth could not be distinguished from the true bacillus.

All things being considered, it is hardly surprising that several bacteriologists have come to regard the true and the false bacilli merely as phases of one and the same micro-organism.§ Be this as it may, there can be no doubt of the great and perplexing resemblance of one to the other.

There is, however, still one more test which is said to distinguish between the two varieties, and which at present seems to be as accurate as it is simple and speedy. I refer to the staining of the so-called polar granules by the Neisser method. Babes and Ernst* drew attention to certain spore-like bodies situated at one or both ends of the Loeffler bacillus. These bodies or granules, for they are not spores, take up aniline stains more readily than the rest of the cell body, and so are easily differentiated. Max Neisser†, who first recognised their diagnostic value, found that if the diphtheria bacillus were grown on solidified Loeffler's blood-serum, the bacilli when treated first with a dilute acid solution of methylene blue, and subsequently with Bismark Brown‡ appear as slender rods stained brown containing dark violet-coloured polar granules at either end. In order that this method should be trustworthy, it is necessary to pay attention to several details. The culture must always be grown on solidified blood-serum at a temperature of 35° C., certainly not higher than 36° C. The growth should be examined when from ten to twenty hours old. If examined earlier the staining may be limited to only a few bacilli; on the other hand, if older than 20 hours there is a danger of other bacilli besides the diphtheric showing somewhat similar staining.

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* Berlin. Klin. Woch. No. 50, 1897.

† Escherich.—Epidemische Diphtherie. Wien, 1894.

‡ Annales de l'Inst. Pasteur. 1890.

‖ Annales de l'Institut Pasteur, 1890. § Schanz—Deutsch. Med. Woch., No. 33, 1898. Axenfeld—Berl. Klin. Woch., No. 9, 1898.

During the past twelve months this method of staining has been largely tried at the Bacteriological laboratory of the Mason University College, where suspected diphtheria cases are examined on behalf of the Corporations of Birmingham, Wolverhampton, West Bromwich, and other neighbouring towns. As the number of cases examined during the year was very considerable there was abundant opportunity for testing the efficiency of the stain. Speaking generally I may at once say that the method has proved to be of the greatest value; it is simple, rapid and trustworthy. In using it, however, it is necessary to observe certain precautions. The stain must be freshly prepared; the blue quickly loses its power, and the polar granules are no longer stained. I find it best to make up both the stains fresh every week. Some little practice is necessary in order to get the maximum staining. I have occasionally found that where the first film showed few or no polar granules, a second trial showed them clearly. The regulations laid down by Neisser as to the age of the culture, the temperature of the incubator and the nature of the culture-medium must be closely followed, or the value of the staining is imperilled. Neisser is, however, incorrect in saying that when the bacilli are grown in broth or on glycerine agar, the double staining does not take place. I have always found the broth-culture stain exceedingly well, and I have frequently obtained good results from the glycerine agar cultures. Nevertheless, the closer one adheres to the original formula the better the results are. The polar granules, which are more oval than round, are, as a rule, found at one or both ends of the bacillus. Occasionally there is a third situated towards the middle, and more rarely a fourth is seen. As the bacilli are very faintly stained, a good microscope, plenty of light and accurate focussing are essential.

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* Zeitzchrift f. Hyg., Bd. iv. u. v.

† Zeitschrift für Hygiene, Bd. 24, 1897.

‡ The formula for this stain is as follows: (1) One gramme of methylene blue (Grubler's) is dissolved in 20 c.cm. of alcohol (96 per cent.) and mixed with 950 c.cm. of distilled water and 50 c.cm. of glacial acetic acid. (2) Two grammes of Bismark Brown are dissolved in 1,000 c.cm. of boiling distilled water, and the solution is filtered.

Cover-glass specimens are stained in No. 1 for 1 to 3 seconds, rinsed in water, counter-stained in No. 2 for 3 to 5 seconds, washed in water, dried, and mounted in Canada balsam.

It is too early to say with any assurance what is the exact value of this double staining. There can be no doubt that as an additional test it is a distinct acquisition. ***But is it accurate enough to decide once and for all between the true and the false varieties?*** I think not. I have not met with any form of pseudo-bacillus or Xerosis-bacillus in which the polar granules resembled those of the true bacillus. Fraenkel examined fifty-four cultures of pseudo-bacilli, and found but one which showed a very similar, if not the true Neisser reaction, although its broth-culture was entirely free from acidity, and it possessed no toxic properties when tested on guinea-pigs. On the other hand, I have several times obtained the characteristic staining from cultures of the true bacillus, which through long cultivation on artificial media had completely lost all pathogenic effects when tried.

I cannot agree with Fraenkel when he asserts that one may say with confidence that any suspicious micro-organism which does not show the polar granules when stained by Neisser's method is certainly *not* diphtheria, for I have occasionally met with cultures of diphtheria which, though treated strictly according to Neisser's formula, showed no trace of the granule staining; yet the same bacilli after further cultivation would suddenly acquire this peculiar property. At first I attributed this lack of staining to some defect in the medium or the technique, but this view I have abandoned, and am now inclined to attribute it to degenerative changes in the bacillus. All observers are agreed, I think, that the granular bodies are not true spores but the result of a degenerative process.

My experience shows that the old stock laboratory cultures stain more readily than fresh virgin cultures do. I have thence come to regard the positive side of Neisser's re-action as of greater value than the negative.

If the suspicious micro-organism stains with characteristic polar granules then it is certainly diphtheria; if, on the other hand, no polar granules are present, then most probably it is not diphtheria.

For purposes of diagnosis the Neisser's stain should be supplemented by an examination of "the hanging drop" and staining with Gram.

MEDICAL ABSTRACTS.

OSTEOMALACIA.

BY FRED EDGE, M.D.

Osteomalacia not due to Lactic Acid.—Hofmann (*Centralblatt f. inn. Medic.*, Nov. 14, 1897; *B. M. J.*, Feb. 19, 1898) denies that mollities ossium is due to a purely chemical change, and that excess of lactic acid in the marrow plays a chief part in removing the lime salts from the bones.

Schmidt and Weber formulated this hypothesis. It was said that lactic acid was to be found in the urine of patients suffering from osteomalacia, and the testing for lactic acid in the urine was recommended as an aid in diagnosis. Hofmann has examined the urine of two patients with well-marked mollities. The tests were repeated several times and were of various kinds. Not a trace of lactic acid was ever found.

Heiss finds that lactic acid does not produce mollities even when administered regularly and for long periods to animals.

Some Remarks on Osteomalacia, by Dr. Neumann (*Archiv für Gynäkologie*, 1896, Vol. 50, page 138).—He has observed nine clinical cases in the second obstetrical and gynæcological clinic of Budapest. There has been much written in recent years on the subject of osteomalacia and its treatment, and Fehling's theory has been both hotly supported and combatted.

Fehling says that osteomalacia is a trophoneurosis of the osseous system produced by the disease of the ovaries.

Petrone considers the cause of the disease to be the micro-organisms of nitrification present in the body, which Winogradsky discovered, and which Petrone thought he had demonstrated in the blood of osteomalacic patients. To confirm his contention he injected the pure culture of the ferment into bitches, after which they suffered from a disease similar to osteomalacia. On the strength of this observation he denies the value of castration—as an operation—and considers the chloroform narcosis during the castration to be the sole healing factor, since the chloroform may kill the micro-organisms mentioned. He says chloral hydrate has a similar effect to chloroform, and he was able to obtain a cure by using two grammes a day for three weeks.

Latzko warmly supports this new teaching; he has collected a fairly large number of cases in Vienna, and has cured many patients with phosphorus (and not with chloral) whose action he ascribes on Petrone's theory to the reduction of oxydation in the organism.

Von Winckel differs from Fehling; he considers the interval of time which occurs between the castration and improvement as much too short for changes to have already taken place in the bones; he points much more to the diminution of tenderness in the muscles and the periosteum whose sensibility is distinctly lessened after castration.

Löhlein says the cessation of tenderness is due to the emptying of the blood vessels as a result of the operation, and denies any specific working of the operation. He has removed a piece of the crest of the ilium in a case of osteomalacia, but cannot find the micro-organisms mentioned. The immediate effect of castration is due to relief of the blood vessels, and the permanent effect to the absence of premenstrual and menstrual congestion.

Fehling denies Petrone's views, and cannot find the micro-organisms either in the body or the ovary; he has made many investigations in giving chloroform and chloral hydrate but without result.

Neusser's studies of the blood of osteomalacic patients are very interesting. In many cases he found the eosinophilous corpuscles of the blood increased, and in some cases delicate elements of bone marrow were present and the myelocytes were increased. Since these marrow elements are not present in normal blood he considers them characteristic of mollities. It is known that the excretion of phosphoric acid, calcium, and magnesium in the urine varies greatly in the different stages.

Neusser found in a case of cure by castration that the number of eosinophilous cells in the blood decreased strikingly, thus proving his view. This investigation points to the connection being not between the ovaries and the bones, but between the ovaries and the bone marrow.

Chrobak cannot find the blood changes. He has seen benefit from chloroform, and two cases where Porro's operation and castration had failed were cured by phosphorus.

Guéniot had a severe case of osteomalacia; he performed Cæsarian section and preserved the ovaries and tubes; the patient however was cured.

Kleinwächter points out that cessation of pregnancy also brings osteomalacia to a standstill.

Orthmann considers osteomalacia to be due to the increased function of the ovaries owing to increased vascularity of the broad ligaments. To this is added the less amount of hæmoglobin in the blood and the decrease in alkalinity whereby the solution of the lime salt is favoured.

Von Winckel thinks that adhesions and retroflexion of the uterus increase the vascularity.

Kehrer ranges osteomalacia under chronic endemic diseases (Lepra, Beriberi) and considers it to be caused by osteolitic bacteria.

Truzzi considers osteomalacia to be due to the metabolic relations between the life changes in the genital glands and the neuropathic reaction of the tissues. Since castration frees the woman from pregnancy and menstruation it acts rationally even if it is at present empirical.

Neumann then gives his cases and an exhaustive discussion of the points, and he arrives at the following conclusions as regards the treatment of osteomalacia:—

1. Neither castration nor Cæsarean section, nor the internal remedies can be considered as certain curatives in osteomalacia, for although castration and Cæsarean section cure the majority of cases, and internal remedies to a less degree do the same, yet there still remain a considerable number of cases in which these methods produce only improvement or not even that.

2. It is undoubtedly the case that improvement can be obtained by the use of internal remedies, but it is probable that this improvement is only the same as that which it is possible to gain by simple amendment of the hygienic and dietetic conditions.

3. Quite a different condition of affairs comes in as relates to the use of phosphorus when given after castration or Cæsarean section if the convalescence is delayed or disturbed; in these cases the use of phosphorus was very valuable, the periosteal pains rapidly lessened and motion was soon resumed.

4. In non-pregnant patients, especially when the disease has not made any great advances, the long use of internal remedies has only a certain range. When the conviction is obtained that after long use no improvement has been gained or the case is worse, and provided that the diagnosis is assured, castration should be performed as soon as possible so as to prevent the advances of the disease and the consequent deformity of the bones, which, if the disease be allowed to advance, may be so great that the heart and lungs are impeded by the thoracic deformity, and the patient's capacity for earning a living lost.

5. In very severe cases even castration will not be able to check the advance of the disease.

6. These cases allow no deduction to be drawn as to the value of chloroform as it was only used in one case. But it ought to be given a trial since in the worst case it improved the general condition and the sacral pain for some time.

7. In pregnant osteomalacic patients, if the pregnancy is not far advanced and the bone disease is making rapid steps, with great weakness and great suffering of the patient, the best method is extirpation of the pregnant uterus and adnexa—hysterectomy with retroperitoneal treatment of the stump by Chrobak's operation—as against artificial abortion and castration afterwards, since it is a less procedure to cure the patient with the one operation than to run the risks of bleeding and infection in the abortion and the puerperal state, and then to carry out castration.

8. At the end of pregnancy or in labour when the termination of these is impossible or only possible by destruction of the embryo (relative indication) Cæsarean section should be chosen, but not the conservative method, but amputation of the uterus, removal of the adnexa and sub-peritoneal treatment of the stump (Chrobak). The extra-peritoneal treatment of the stump is only indicated in those cases where special circumstances, as rupture or infection of the uterus already are present and require it. Commencement of labour, that is, opening of the os uteri, cannot be taken as a contra-indication to sub-peritoneal treatment of the stump.

Heyse (*Archiv f. Gyn*, Vol. 53, 1897).—There are three possibilities given as explanations of the connection of this disease with the activity of the genital glands, especially the ovaries. Firstly, the physiological activities of the ovaries may suffice to originate or, at any rate, to increase osteomalacia in a diseased constitutional condition such as we call a diathesis. The ovaries here may be normal or may be in an indifferent pathological condition as regards the osteomalacia.

Secondly, there may be pathological activity of the ovaries with likewise a diathetic condition. Examination also in this case might yield a normal result, since the pathological activity could be fully functional and nervous.

Thirdly, and this is most important in the question of osteomalacia, the disease under question might only arise under quite special ovarian disease (in men with a definite disease of the testicles); there must exist an "osteomalacic ovary," which ought to be diagnosable by definite microscopical changes. Whether we must also consider a diathesis to be present here as well is only of secondary consideration. Likewise, it might well be ~~that the~~ "osteomalacic ovary" would not be changed in any anatomical way, and would be ~~only functionally deranged~~.

It is said that there is a diminution in the number of follicles in the ovary and of ova. If the changes are functional or in the nervous system, it may well be that we do not know how to make them out microscopically. Heyse worked out the number of follicles in two cases, and finds the figures are as 5,100 to 17,600, the latter being the normal number in the ovary.

Neumann (*Archiv für Gynäkologie*, Vol. 51, 1896) has worked at the chemistry of osteomalacia. The metabolic changes include not only calcium, magnesium, and phosphorus, but also nitrogen, and the whole system undergoes pathological changes. The results obtained are in favour of Fehling's theory, since castration and hysterectomy influence the metabolism of the body favourably so far as osteomalacia is concerned. He says:—"We believe we have proved that the radical treatment of osteomalacia—castration—is only justified to a certain extent, and that after this limit the disease is not influenced by the operation, and it may be that the patients are injuriously affected by it. This point or limit is difficult to define, but it may be said that it is not solely or chiefly dependent on the amount of bone distortion, but that the general symptoms (wasting, muscle weakness, disturbance of the circulatory and respiratory organs, albuminuria, &c.) are much more decisive in answering this question. When these grave symptoms are present there can be expected no good results from castration, and therefore more palliative remedies are indicated.

It must also be stated that even in mild cases we do not mean to give the radical treatment any sovereignty over the palliative treatment; this much is certain, when palliative remedies have been tried for a period, which depends on the progress of the disease, and no definite improvement has been obtained, then radical treatment must be carried out without delay before that limit has been reached when radical treatment is of no avail. This radical treatment is castration, or hysterectomy in pregnant women where the viability of the child cannot be waited for.

The chief bone lesion found so far has been the hyaline degeneration of the vessels of the marrow, but whether this is primary or secondary to the osteomalacia is difficult to say.

Fehling has reported 14 cases of osteomalacia treated by castration and 6 by Porro's operation. The results of castration were as follows:—One patient died immediately after operation (obstruction of bowel). One patient whose complete cure was watched for a year has drifted away and cannot be found. Four patients died of other causes after remaining well for two years: in them all locomotion was preserved until the onset of the cause of death. Eight are alive, and of these—

2 were operated upon 7 years ago and are completely cured.
1 „ „ 4 „ „ „ „
3 „ „ 3 „ „ „ „
1 „ „ 3 „ is decidedly improved.
1 „ „ 3 „ and was well for 2¼ years and has relapsed the last ¾ of a year.

Of the 6 patients delivered by Porro's operation 5 were cured (1 since slightly relapsing) and 1 died of sepsis after the operation.

The extirpated ovaries (examined by Dr. Rossier) show similar changes to those described by Velits (hyaline degeneration of the vessels).

Fehling recommends castration (removal of the tubes and ovaries) for severe cases of osteomalacia (excepting during the puerperium) if all means have been taken without result and the patient has become incapable of walking or doing her work.

Curatulo and Tarulli (*Centralblatt f. Gynäk.*, 1895, No, 21) have made experiments on animals to study the influence of castration on the metabolism of the body. Bitches were placed upon a regulated diet until the average excretion of nitrogen and phosphates became almost steady. After removal of the ovaries the amount of phosphates in the urine was markedly diminished in amount for a long time. In one bitch an average daily of 9·93 g. of nitrogen and 1·50 g. of phosphorus before castration; after the operation the daily average observed for three months was about as before of the nitrogen, while the average excretion of phosphorus was about 0·60 g. less. This striking diminution came on somewhat rapidly after castration; in one bitch a decrease in the phosphorus excreted was observed as soon as the third day after operation. The authors, considering that the phosphorus comes partly from the food and partly from the products of the working of tissues containing organic bodies holding phosphorus, and chiefly from the removal of earthy phosphates from the bones, come to the conclusion given:—

We are of opinion that the ovaries, just as the other glands of the system, in accordance with the theory of Brown-Séquard, have an internal secretion, that is, they constantly send a product into the blood whose chemical composition is yet unknown. This body is specially capable of promoting the oxidation of phosphorus-containing organic bodies which yield the matter for the formation of the salts of bone. Hence it follows that removal of the ovaries leads to a great retention of organic phosphorus, which leads to a great increase of lime salts in the form of calcium and magnesium phosphate and the re-establishment of the normal hardness of the bones

REVIEWS.

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A TEXT-BOOK OF DISEASES OF WOMEN.*

THE author states in the preface that the book is written for the medical student, and from this point of view it is, in our opinion, deserving of the highest praise.

The descriptions of diseases and the views as to their causation are thoroughly sound, and for the most part in accordance with those of standard English works. We will briefly note some points which have appeared to us to suggest comment as we have looked through the book.

The second chapter is on Methods of Examination; and the use of a gynæcological table with the woman in the lithotomy position, her feet supported by stirrups, is recommended. This position undoubtedly facilitates examination, but has not come into vogue in this country nor does it seem likely to do so. We note that especial regard is paid to aseptic precautions in making routine examination, and justly so, as there is much neglect in this particular in daily practice, and we are glad to see the following statement—"With our present methods of examination, however, the sound is but of little, if any, use. The size and direction of the uterus can in nearly all cases be determined by bimanual examination." With this view we entirely agree, and think that far too much importance is attached to the use of the sound in English text-books; and as a result there is far too great a tendency to use it as a routine in investigating uterine disease.

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* A Text-Book of Diseases of Women. By Charles B. Penrose, M.D., Professor of Gynæcology in the University of Pennsylvania. One volume, octavo, 529 pages. Price 20s. Rebman Publishing Company.

Attention is called to a small point in the diagnosis of gonorrhœa, viz., that the orifice of the duct of Bartholin's gland is surrounded by a red areola; this is called the "gonorrhœal macula," and is said to persist after all other evidences of gonorrhœa have disappeared. To the importance of this sign we have for some time paid attention, but it is not generally recognised and taught in our text-books.

The author states in the preface that he has in most instances recommended but one plan of treatment for each disease, and we find in reading through the book that he has generally given the plan which has been most widely adopted and is generally looked upon as the best, but we do not think that this holds good in reference to Perinæorraphy; he advises denudation of the surfaces, with removal of mucous membrane and skin, and does not mention the flap-splitting method (which has been especially associated with the name of Lawson Tait) and which in our opinion is far preferable to any method which involves loss of tissue.

In the treatment of Prolapse he advocates colporraphy, and entirely discards Pessaries, not mentioning the ring Pessary, which in the hands of gynæcologists in this country is found to give effectual relief in some cases. Although he advocates the treatment of retroversion by the pessary; for cases of backward displacement of the uterus, which do not yield to the pessary treatment, he advocates ventral fixation or Alexander's operation, placing more reliance on the former. We think that vaginal fixation is replacing ventral as an operative treatment of retroflexion In common with other American writers, the author appears to us to attach far too much importance to the operative treatment of laceration of the cervix, and he makes the following statement:—"In women approaching middle life (forty years of age) all lacerations of the cervix should be closed, whether or not they produce symptoms," giving as the reason that cancer is most likely to originate in an old laceration. In the chapter on cancer of the cervix he states that that disease is very rare in women who have never conceived. Our own experience does not bear this out, as we have met with several cases.

In the chapter on fibroids it is stated that "operative treatment is usually demanded in the case of fibroid tumours." As a recent discussion at the Obstetrical Society of London showed, this is not by any means the opinion of all the British authorities, though the statement that "hysterectomy is deservedly the favourite operation for uterine fibroids at the present day" will meet with general acceptance.

The book is printed on good paper, with excellent type, and is profusely illustrated. The American method of spelling, with the avoidance of all diphthongs, is followed throughout, and such words as "fetal" look strange to our eyes.

C. E. P.

MEDICAL AND SURGICAL REPORT OF THE PRESBYTERIAN HOSPITAL IN THE CITY OF NEW YORK.*

THE third volume of the Reports of the Presbyterian Hospital of New York contains an exceptionally valuable series of papers. The interest centres in the medical articles, which contain the record of much original work and minute observation.

We cannot attempt to notice more than a few of the most important of the twenty-eight articles contained in the volume, and therefore pass over altogether the records of individual cases, although many of these are of considerable interest. The first of the longer contributions is to be found in Dr. J. S. Thacher's essay on the various methods of estimating the hydrochloric acid present in the contents of the stomach. In addition to an excellent comparison of these methods, this paper contains the record of a large number of original observations. It is especially to be noted that Dr. Thacher expresses an unqualified approval of Mintz's method for the estimation of the free hydrochloric acid, a result which is the more satisfactory in that this is the only method which can be carried out without the resources of a chemical laboratory and the expenditure of a large amount of time. Dr. Thacher postpones an estimation of the clinical importance of these examinations to some future time, and it will be interesting to ascertain whether his experience supports the growing doubts as to their practical clinical value. Drs. Walter B. James and George A. Tuttle record a number of observations on the bacteriology of the blood in various diseases, arriving at the conclusion that the usefulness of such examinations is very limited except in cases of malignant endocarditis and a few of typhoid fever. The most elaborate paper is contributed by Drs. Fred P. Solley and Herbert S. Carter, who minutely analyse a series of 87 consecutive cases of malaria which occurred in the practice of the hospital. This paper is a most excellent piece of work. Dr. George A. Tuttle analyses the results of the Widal reaction as carried out in 211 cases, 106 of which were clinical instances of typhoid fever, and in all of which, with four exceptions, the reaction was obtained. It is to be noted, however, that it was only by making repeated examinations in a number of cases that this satisfactory result was arrived at, and that single observations would have given a very different conclusion. One hundred cases were clinically not typhoid fever, and in only four of these did the reaction take place. Finally, four cases in which typhoid fever had occurred within a year of examination all gave the reaction, whilst one with an interval of 21 months gave a negative result. We have also to notice a series of observations by Dr. W. P. Northrup on the value of tuberculin (Koch's original solution) as a test for tuberculosis, which tend to support its reliability, and possibly to show its freedom from danger; and a contribution by Dr. Walter B. James to the study of malignant endocarditis caused by the micrococcus lanceolatus.

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* Medical and Surgical Report of the Presbyterian Hospital in the City of New York. Volume III. January, 1898. Edited by Andrew J. McCosh, M.D., and Walter B. James, M.D. New York: Trow Directory Printing and Bookbinding Company.

In the section of Surgery, the chief articles are by Dr. Charles K. Briddon, who describes cases of operation on the pelvis of the kidney and on the gall-bladder and bile ducts, together with a series of 18 cases of inter-muscular operation for appendicits. Dr. Edwin S. Steese also records 15 cases of brain abscess, and Dr. Andrew J. McCosh 14 cases in which trephining was resorted to for the treatment of epilepsy. The one gynæcological paper is from the pen of Dr. Forbes Hawkes, who records a series of 41 hysterectomies.

RHEUMATOID ARTHRITIS.*

DR. BANNATYNE'S treatise on Rheumatoid Arthritis has speedily attained the dignity of a second edition. Of this the author takes advantage to lay increased stress on his belief in the microbic origin of at least the acuter forms of the disease, and also to urge the necessity of reconsidering the question of the nature of some cases usually supposed to belong to the same category. With regard to the bacteriological question it must be admitted that there is still room for doubt as to the part played by the micro-organisms described by Dr. Bannatyne and Dr. Wohlmann in producing the symptoms of the disease, and the matter must remain in doubt until their results have been verified and extended by further observations. Even if further research does not confirm their views, however, the value of their attempt to explain the causation of this most obscure disease is by no means to be overlooked.

In the chapter on the Varieties and Diagnosis of Rheumatoid Arthritis, Dr. Bannatyne expresses his belief that at least two distinct conditions have hitherto been included under that title: first, the "acute and subacute cases characterised by inflammatory changes in the joints, and by ulceration and erosion of the cartilages and bones, by muscular atrophy, by nerve and trophic phenomena, and by glandular enlargement;" and secondly, chronic cases characterised by "a slowly progressive thickening and hardening of all the joint structures, by the development of deformities, by the formation of osteophytes, and by the lipping of cartilage." The differences between these two sets of cases are of course very striking, but the argument in favour of their complete separation is a little weakened by the fact, which the author himself points out, that the acute disease not infrequently leaves behind it a condition indistinguishable from that seen in the cases which are chronic from the outset. The point, however, is by no means conclusive, and much weight must be allowed to Dr. Bannatyne's wide experience.

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* Rheumatoid Arthritis: its Pathology, Morbid Anatomy, and Treatment. By Gilbert A. Bannatyne, M.D. Glas., M.R C.P. Ed.. Hon. Physician to the Royal United Hospital and to the Royal Mineral Water Hospital, Bath. Second Edition. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent, and Co. Limited. 1898.

Dr. Bannatyne asserts the efficacy of creosote and its derivatives in the treatment of rheumatoid arthritis, and states that his observations show positively the value of these drugs. We wish that he had given some evidence on this point. Would it not be possible to compare the results of such treatment with those of other methods in some definite particulars? For example, the records of the weight of the patients would at any rate afford some evidence in the matter, even if no other means of registering progress could be devised.

TROPICAL DISEASES.*

THIS book affords an admirable introduction to the study of the diseases of warm climates. The author declares that it does not aim at the elaboration of the larger and well-known works on the same subject; but for a small book, in which the information is necessarily somewhat selected and condensed, it certainly reaches a high level of excellence.

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* Tropical Diseases: A Manual of the Diseases of Warm Climates. By Patrick Manson, M.D., LL.D. Aberd., F.R.C.P., Physician to the Seamen's Hospital Society, attached to the Branch Hospital; Lecturer on Tropical Diseases at St. George's Hospital and Charing Cross Hospital Medical Schools. London, Paris, New York, and Melbourne: Cassell and Company Limited. 1898.

The book is divided into seven sections, the arrangement of the contents of which is, perhaps, a little open to criticism. Thus, for example, it seems at first sight somewhat artificial to separate Cholera and Dysentery from the Fevers, and to class them in a separate Section as "Abdominal Diseases." The other sections are devoted to the study of General and Local Diseases of Undetermined Nature, Infective Granulomatous Diseases, Animal Parasites and Associated Diseases, and Skin Diseases.

Of the various chapters, those on Malaria and Filiariasis are, we think, undoubtedly the best. This is not surprising, seeing that they are both subjects on which Dr. Manson is an acknowledged authority, and in connection with which he has done much original work. The series of chapters on Malaria give an extremely clear and interesting account of that most interesting disease. The author's well-known views with regard to the nature of the crescents and flagellated bodies are of course insisted upon, though the opinions of those who disagree with him are also stated. There is also a full account of what must at present be termed Dr. Manson's conjectures with regard to the part played by the mosquito in the extra-corporeal life-history of the parasite. These conjectures have much to be said for them on the ground of *prima facie* probability, and have received not a little support from the work of Surgeon-Major Ross, but as Dr. Manson himself admits, they partake at present more of the nature of speculations than of scientifically ascertained facts. The chapter on Filiariasis is second only in excellence to those on malarial infections.

With regard to the rest of the chapters, we can only say that although the subjects with which they deal are treated somewhat less fully, they yet afford a clear and easily grasped account of the several diseases, and that the book shows no trace of that tendency to superficial work which is the fault of so many small text-books. It will hence meet a want which has been felt by many practitioners, and especially by those whose acquaintance with tropical diseases is not likely to be sufficiently extensive to justify the very considerable outlay of time needed for the study of the larger works on the subject.

SYSTEM OF MEDICINE. BY MANY WRITERS.*

THERE is so little adverse criticism to be passed on this excellent volume, that our review can scarcely consist of more than a record of a few of its most interesting articles. It is devoted to diseases of the respiratory and circulatory systems.

The volume opens with two exhaustive articles by Dr. Wm. Ewart on Bronchitis and Bronchiectasis, the latter of which is probably the best exposition of its subject extant. Dr. Pye-Smith follows with the chapter on Pneumonia, in which there is naturally but little novelty to be found, though it is written in the author's usually excellent style. Although this article includes the chronic as well as the acute forms of pneumonia, a separate chapter is devoted later on to the subject of Pneumoconiosis, and this has been well written by Dr. J. T. Arlidge. To Dr. Percy Kidd has been entrusted the peculiarly difficult task of writing on Pulmonary Phthisis, and Dr. Kingston Fowler deals with Emphysema and Syphilitic Disease of the Lungs. These articles are all good, the last gaining greatly in interest from the cases which are recorded in full. Dr. Goodhart contributes a characteristically readable article on Asthma and Hay Fever, and the Diseases of the Pleura are finally described by Drs. West, Gee, and Finlay, Dr. Herringham coming to the assistance of Dr. Gee in dealing with the pathological anatomy of the disease. Although on the whole this first half of the volume does not reach the exceptionally high level of excellence which marks nearly the whole of the articles on the diseases of the circulatory system, yet we know of no better series of articles in any system on the same set of subjects.

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* System of Medicine. By Many Writers. Edited by Thomas Clifford Allbutt, M.A., M.D., LL.D., F.R.C.P., F.R.S., F.L.S., F.S.A., Regius Professor of Physic in the University of Cambridge, Fellow of Gonville and Caius College. Volume 5. London: Macmillan and Co. Limited, 1898.

In the diseases of the circulatory system, not only are there admirable articles on the General Features of the Blood by Professor Michael Foster, on Methods of Clinical Examination of the Blood by Dr. Monckton Copeman, and on Cardiac Physics by Professor Sherrington, but a place has been given to the various Anæmias, the Hæmorrhagic Diseases, and Dropsy—the last article being from the pen of Dr. Dickinson. Of these articles, that on Chlorosis, by Professor Allbutt, stands out from the rest, if only for the excellence of the style in which it is written. The same writer deals with Functional Diseases of the Heart, Mechanical Strain of the Heart, and Disease of the Aortic Area, and all of these articles are eminently well worth studying. Of the remaining chapters, that by Dr. Sansom on the Diseases of the Mitral Valve deserves special mention, for, although differing widely in style from its fellow on Aortic Disease, it is yet in its way as complete an exposition of its subject. These two articles are in our opinion two of the best of those which have as yet appeared in the System.

ATLAS OF METHODS OF CLINICAL INVESTIGATION.*

Dr. Eshner's translation of Dr. Christfried Jakob's Atlas of Methods of Clinical Investigation forms the first of the American series of "Atlases" which are to appear under Messrs. Rebman's auspices. These are translations into English by American writers of the well-known corresponding German series, and the remarkably small price at which they are issued places these books now for the first time within the reach of all medical students.

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* Atlas of Methods of Clinical Investigation, with an Epitome of Clinical Diagnosis and of Special Pathology and Treatment of Internal Diseases. By Dr. Christfried Jakob, formerly First Assistant in the Medical Clinic at Erlangen. Authorised Translation from the German. Edited by Augustus A. Eshner, M.D., Professor of Clinical Medicine in the Philadelphia Polyclinic, Physician to the Philadelphia Hospital, &c. London: The Rebman Publishing Co. Ltd.

The present book is an excellent example of the diagrammatic method of teaching clinical medicine, and the numerous and beautifully-executed coloured plates, which occupy a large part of it, will doubtless be of the greatest assistance to students. The first part is entirely taken up by the plates. These are devoted first to "Clinical Microscopy and Chemic Color-Reactions," representing the results of the examination of the blood, urine, gastric contents, sputum, and other normal and pathological materials; secondly, to the "Normal Projection of the Viscera and Percutory Topography," a section which will greatly aid the student in obtaining a clear idea of the relations which the various viscera hold to the surface of the body; and, lastly, to diagrammatic representations of the physical signs of disease. The latter set of diagrams are perhaps a little difficult to follow owing to the somewhat complicated series of symbols needed to represent the various physical phenomena, but even these cannot fail to be of assistance to a student whilst reading other text-books.

The latter half of the book contains a good account both of the methods of clinical examination and of the chief signs and symptoms of the various diseases, and includes a very brief consideration of their diagnosis and treatment. The whole book, however, is essentially devoted to physical signs and physical examination, and we welcome it as affording valuable assistance in the acquirement of a clear knowledge of these all-important matters.

MASTERS OF MEDICINE

SIR BENJAMIN COLLINS BRODIE.*

THE life of Sir Benjamin Brodie perhaps hardly equals in interest that of its predecessors. For this, however, its author cannot be held responsible, for the incidents in the life are not very numerous, nor is there a large amount of original scientific work to be recorded. Although Sir Benjamin Brodie was undoubtedly a great surgeon, it is perhaps a little difficult to attribute to him any such pronounced influence on the progress and history of medical science as was exercised by the greater men whose biographies have hitherto appeared. Hence Mr. Holmes had a harder task to perform than that set before his colleagues, and we fancy that his demonstration of Sir Benjamin Brodie's "Mastership of Medicine," in the sense of the title of the series, is sometimes a little laboured. Moreover, the picture left in the mind is at the end rather colourless and its outlines wanting in clearness, and we feel that we know somewhat less of its original than we could wish.

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* Masters of Medicine—Sir Benjamin Collins Brodie. By Timothy Holmes, M.A., F.R.C.S. London: T. Fisher Unwin.

The book, however, only suffers from comparison with the very interesting works which have preceded it. In itself it is extremely well written, as would be expected from its author, and is of value as giving details of the life of a man whose name alone is now familiar to the majority of the present generation.

SCHENK'S THEORY.*

THE value of this book will, we are inclined to think, depend mainly upon the elaborate review of the various theories of sex determination with which it opens. Professor Schenk adopts the now prevalent view as to the dependence of the sex of the offspring upon the degree of nutrition supplied. His own contribution to the discussion lies in the contention that the small quantity of sugar found, as he maintains, in the normal urine, is an indication of an incompleteness in metabolism which in a pregnant woman interferes with the nutrition of the fœtus, and therefore tends to produce a child of the female sex. Hence

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* The Determination of Sex. By Dr. Leopold Schenk, Professor at the Imperial and Royal University, and Director of the Embryological Institute in Vienna. Authorised Translation. London: The Werner Company. 1898.

Professor Schenk believes that such a modification in the diet of the mother as will tend to remove all traces of sugar from her urine will go far towards insuring the birth of a male child, and he brings forward cases by which he claims that he has been able to prove, or at any rate support, his theory. We cannot pretend to think these cases very conclusive, nor does the theory itself appeal to us as being probably true. We do not feel convinced that the removal of such minute traces of sugar as exist in the normal urine, if they exist at all, need necessarily indicate a greater nutritive power on the part of the mother, and the fact, which the author himself points out, that a diabetic woman may bring forth a male child, seems to us to be almost conclusive against the theory. It is, however, fair to add that Professor Schenk does not consider this point of vital importance.

BUXTON: ITS BATHS AND CLIMATE.*

IN this fourth edition of his book Dr. Hyde has revised and partially re-written some of the chapters, whilst new sections have been added on Buxton as an Educational Centre and Buxton as a Resort for Consumptives. The latter is probably the most important addition to the book, and in it Dr. Hyde expresses his opinion that Buxton possesses not a few of the characteristics which have rendered the Swiss health resorts so popular in the treatment of phthisis. These characteristics, though of course much modified, are purity of air, warmer temperature in winter, rarity of atmosphere and low barometric pressure, comparative absence of mist, dryness of air and subsoil, large amount of ozone, and intensity of light. The recent reaction in favour of open-air treatment of consumptives at home, in preference to their banishment to distant and less comfortable sanatoria, gives much interest to this opinion, and if proper accommodation and means are forthcoming at Buxton for this open-air treatment, it is likely, we think, to become an important resort for consumptive patients.

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* Buxton: its Baths and Climate. By Samuel Hyde, M.D., Vice-President and Chairman of Council British Balneological and Climatological Society. Fourth Edition, revised. Manchester: John Heywood. 1898.

PRACTICAL ORGANIC CHEMISTRY.*

This book is mainly intended for the use of medical students and others reading for the science examinations of the various universities. Each substance included is treated independently, and no systematic tabulation is attempted, but under each heading a good summary of the chief properties and reactions of the compounds will be found. This, the second edition, has been brought into uniformity where necessary with the new Pharmacopœia. It is a book which should be of considerable value to students.

MAMMALIAN ANATOMY.†

We welcome the advent of this splendidly printed and illustrated volume, because we are impressed with the great importance of a due study of mammalian types for those who would really appreciate the anatomy of the highest and most specialised of that order—Homo. To the mind of too many so-called biologists of the day, biology means the study of worms and insects, and if it rises beyond this to the consideration of vertebrata, it seldom reaches beyond fishes and the ever-present frog. Dr. Jayne has in this encyclopædic work given a very full account of the osteology of the Cat as a type of the mammalia readily obtainable by anyone possessed of a back-garden and a saloon rifle. The description is extremely full, and deals even with such subjects as variations in the teeth and size of the bones, so interesting, yet so much neglected. When we state that there are over 600 figures, admirably drawn and equally admirably reproduced, it will be understood that the book has been brought out in the most complete manner.

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* Practical Organic Chemistry: the Detection and Properties of some of the More Important Organic Compounds. By Samuel Rideal, D.Sc. Lond., F.I.C., F.C.S., sometime Lecturer on Chemistry at St. George's Hospital Medical School, and Examiner in Chemistry, Royal College of Physicians. Second Edition. London: H. K. Lewis. 1898.

† Mammalian Anatomy, a Preparation for Human and Comparative Anatomy. By Horace Jayne, M.D., Ph.D. Part i., The Skeleton of the Cat. London and Philadelphia: J. B. Lippincott Co.

We can strongly recommend it to all students of Mammalian Anatomy.

ELEMENTS OF HISTOLOGY.*

THE nine years that have elapsed since the appearance of the last edition of Dr. Klein's text-book have added many things to our knowledge of histology. Hence much revision and re-writing have been found to be necessary for its re-publication. Especially is this true with regard to the sections dealing with the nervous system, parts of which have been written entirely afresh, with the result that a very clear account of all the most recent work is to be found in its pages. Dr. Klein has been assisted in this work by his colleague at St. Bartholomew's Hospital, Dr. J. S. Edkins, and both authors are to be congratulated on the appearance of a book which deserves well to become, as it probably will become, the favourite among the smaller text-books on histology.

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* Elements of Histology. By E. Klein, M.D., F.R S., Lecturer on General Anatomy and Physiology, and J. S Edkins, M.A., M.B, Joint Lecturer and Demonstrator of Physiology in the Medical School of St. Bartholomew's Hospital. Revised and Enlarged Edition London, Paris, New York, and Melbourne: Cassell and Company Limited. 1898.

ORAL SURGERY.*

This little work, intended chiefly for dental students preparing for their final examination, is one that can be thoroughly recommended for that purpose. It is written in good style, and is both concise and practical.

The author has not confined himself to English authorities in compiling this book, for the woodcuts in Chapters iii. and iv., treating of periostitis of the jaws and alveolar abscesses, are taken from an American work, and bring the subjects in hand quite up to date. A careful perusal of this book by both medical and dental practitioners would amply repay them.

HEALTH LOSS AND GAIN.†

The writer of this book is well known as a teacher of physical exercise. We heartily agree with what is the real contention of the book, namely, the great gain to health which would accrue from a more systematic and wide-spread attention to the development of the body and its several parts. We fear, however, that the preliminary chapters will do little more than weary those readers who already realise, as do most members of the medical profession, the importance of the preventive side of the practice of medicine. We should welcome a more explicit treatise on physical culture from the same pen.

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* Oral Surgery. By Edmund Roughton, B.S., M.D. Lond., F.R.C.S. Eng., Assistant-Surgeon and Surgeon-in-Charge of the Throat and Ear Department Royal Free Hospital, Honorary Visiting Surgeon National Dental Hospital. London : J. P. Segg and Co.

† Health Loss and Gain. No. 1. A Plea for the more Definite and Extended Practice of Preventive Medicine. By M. A. Chreiman. London : The Rebman Publishing Company Limited. 1898.

THE EDINBURGH MEDICAL JOURNAL.*

We have received the third volume of the new series of the *Edinburgh Medical Journal*, containing the six numbers which have appeared during the first half of the current year. Those who are in the habit of reading the monthly issue of this journal will know that the volume contains a large number of papers of great interest; and the reviews of current medical and surgical work are carried on on a scale which renders them of more than ordinary value. The volume therefore forms an important addition to any medical library.

THE CURE OF CONSUMPTION.†

This book forms one of the Burdett Series of Popular Text-Books on Nursing. It contains a good account of the principal points which are to be observed in nursing cases of phthisis, both acute and chronic. The preliminary elementary chapters on the anatomy and pathology of the disease will probably interest the readers for whom they are written.

TRANSACTIONS OF THE DERMATOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.‡

We have to acknowledge the receipt of the fourth volume of the Dermatological Society's Transactions, which contains abstracts of many interesting communications, together with several plates. The volume is, as usual, of very considerable interest.

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* The Edinburgh Medical Journal. Edited by G. A. Gibson, M.D., F.R.C.P. Ed. New Series, Vol. iii. Edinburgh and London : Young J. Pentland. 1898.

† The Cure of Consumption. By W. H. Daw, M.R.C.S., L.R.C.P. Lond., late House Physician Royal Hospital for Diseases of the Chest London : The Scientific Press Limited. 1898.

‡ Transactions of the Dermatological Society of Great Britain and Ireland. Edited by George Pernet, M.R.C.S., and William Freeman, F.R.C.S. 1897-8. Volume iv. London : H. K. Lewis.

LITERARY NOTES.

MR. W. B. SAUNDERS asks us to call attention once more to the series of Hand Atlases now being published, the first volume of which is noticed in the present number of the "Review." No less than 100,000 copies of the lithographic plates which form so prominent a feature of the atlases have recently been purchased, in the belief that a very large demand will be caused by the extremely low prices at which the books are issued. We are asked to state that these low prices—varying from 2½ to 3½ dollars, as compared with those of the original large German edition, which ranged from 30 to 40 dollars—have been rendered possible by the fact that eleven separate publishers have joined together in sharing the initial cost of the venture. We cordially hope that it will meet with the success which the high character of the publications should certainly ensure.

Mr. Saunders also announces the immediate publication of new and revised editions of Da Costa's Modern Surgery, McFarland's Pathogenic Bacteria, an American Text-Book of the Diseases of Children, an American Text-Book of Gynecology, Vierordt's Medical Diagnosis (re-written and enlarged, and translated by Dr. Stuart), and Butler's Meteria-Medica and Therapeutics. The following new works are also announced for early publication, namely:—A Text-Book of Pathology, by Stengel; a Text-Book of Obstetrics, by Professor Hirst; the American Pocket Medical Dictionary; an American Text Book of Diseases of the Eye, edited by Drs. de Schweinitz and Randall; and Church and Peterson's Mental and Nervous Diseases.

We are further requested to state that the Rebman Publishing Company, 129, Shaftesbury Avenue, London, have undertaken the entire publishing and advertising departments of "Public Health," the official journal of the Incorporated Society of Medical Officers of Health, and that all communications relating to the business part of the journal should in future be addressed to them.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

We have received from Messrs. BROWN BROS., of Glasgow, samples of the "Harzbach Mineral Water." The water is effervescing, and has a slightly alkaline taste of a by no means unpleasant nature. It should prove acceptable as a mild mineral and table water.

New Books, etc., Received.

Medical Diseases of Infancy and Childhood. By DAWSON WILLIAMS, M.D., Lond., Fellow of the Royal College of Physicians of London, and of University College, London; Physician to the East London Hospital for Children, Shadwell. London, Paris, New York, and Melbourne: Cassell and Company Limited. 1898.

Tests and Studies of the Ocular Muscles. By ERNEST E. MADDOX, M.D., F.R.C.S Ed., Ophthalmic Surgeon to the Royal Victoria Hospital, Bournemouth. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent, and Co., Lim. 1898.

Dwelling Houses: Their Sanitary Construction and Arrangement. By W. H. CORFIELD, M.A., M.D. Oxon., F.R.C.P. Lond., Professor of Hygiene and Public Health in University College. Fourth Edition. London: H. K. Lewis. 1898.

The East Suburban Medical Protection and Medico-Ethical Society Limited, Memorandum of Articles of Association.

Transactions of the Dermatological Society of Great Britain and Ireland. Edited by GEORGE PERNET, M.R.C.S., and WILLIAM T. FREEMAN, F.R.C.S. 1897-8. Volume iv. London: H. K. Lewis.

The Essential of the Art of Medicine, and other Papers. By J. H. MUSSER, M.D., of Philadelphia.

The Tuberculin Test in Cervical Adenitis. By EDWARD O. OTIS, M.D., of Boston, Mass.

Chloroform: Its Absolutely Safe Administration. By ROBERT BELL, M.D., F.F.P.S., etc., Senior Physician to the General Hospital for Diseases Peculiar to Women, Glasgow.

The Cold-Bath Treatment of Typhoid Fever. By F. E. HARE, M.D., Late Resident Medical Officer, Brisbane (General) Hospital, Queensland. London: Macmillan and Co. Limited. 1898.

The Employment of Solutions of Toluidin-Blue as Collyria, and as a Stain for Corneal Abrasions and Ulcers. By CLARENCE A. VEASEY, A.M., M.D., Adjunct Professor of Diseases of the Eye, Philadelphia Polyclinic.

Text-Book of Zoology. By H. G. WELLS, B.Sc. Lond., F.Z.S., F.C.P., and A. M. DAVIES, B.Sc. Lond. London: W. B. Clive.

Shaw's Manual of the Vaccination Law. By a Barrister-at-Law, Sixth Edition. London: Shaw and Sons. 1898.

Janus: Archives Internationales pour l'histoire de la Médecine et pour la Géographie Médicale. Directeur: Dr. H F. A. PEYPERS. Juillet-Août, 1898. London: Williams and Norgate.

Calendar of the School of Medicine of the Royal Colleges, Edinburgh. Session 1898-99.

Methods of Staining the Nervous System. By Dr. BERNHARD POLLACK. Translated from the Second German Edition by WILLIAM R. JACK, M.D., B.Sc., Dispensary Physician to the Western Infirmary of Glasgow, and Assistant Medical Tutor to the Professor of Clinical Medicine in the University of Glasgow. Glasgow: F. Bauermeister. 1899.

⁂ Authors can have reprints of articles at the following rates:—

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THE
BIRMINGHAM MEDICAL REVIEW.
NOVEMBER, 1898.

ORIGINAL COMMUNICATIONS.

THE NEED FOR A NEW DEPARTURE IN THE TREATMENT OF CHRONIC DISEASE.

BY ALFRED H. CARTER, M D., F.R.C.P.
PROFESSOR OF MEDICINE, MASON UNIVERSITY COLLEGE.
SENIOR PHYSICIAN TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

THERE is probably no class of patients whose management is beset with greater practical difficulties than the sufferers from chronic diseases, such, for instance, as chronic dyspepsia in its Protean manifestations, chronic rheumatism, rheumatoid arthritis, gouty troubles of various kinds, Bright's disease, diabetes, hysteria, neurasthenia, many pelvic disorders of women, and a host of unclassified minor ailments which it is unnecessary to enumerate. Of many such cases it may truly be said that, sometimes better and sometimes worse, they are treated first by this remedy and then with that; the medical attendant is wearied to the verge of exhaustion by repeated efforts to grapple with a situation of great difficulty, until at last the time arrives when the complaint comes to be regarded as incurable, and the practitioner continues his visits rather in obedience to conventional considerations than from any material benefits likely to accrue thereby.

Even in hospital wards chronic cases are elbowed out of the way in favour of the greater interest and urgency of acute cases, while in the out-patient departments there is neither time nor opportunity to give them the attention they intrinsically deserve and require. Small wonder that, under these circumstances, the field of chronic disease becomes the happy hunting ground of quacks and faddists, and that the unfortunate sufferers are exploited by drug mongers, whose enterprise is only equalled by their unscrupulous presumption.

Yet, under more favourable conditions, and with better opportunity, I am persuaded that the opprobrium which hangs so heavily upon us in relation to chronic disease might be diminished. Is not something of the nature of a new departure possible? As bearing on the answer to this question I invite attention to the following considerations:—

In limine, I would recall the elementary truth that every departure from health necessarily implies either some intrinsic alteration on the part of the tissues or organs of the body—either inherited or acquired, or some qualitative or quantitative change in the conditions to which the body is exposed, or to a combination of both of these factors. It therefore follows that treatment must travel upon parallel lines, namely, by enabling the tissues and organs of the body better to resist disturbance, or by correction of external conditions.

In either case, the success and efficacy of treatment essentially and directly depend upon the property which living tissue naturally possesses of resisting disturbance from without, and of recovering its normal functions as soon as the causes of disturbance are removed. It is unnecessary for my present purpose to analyse and set forth the various ways in which these recuperative powers are manifested—the mere statement of the fact is sufficient. Its significance lies in this truth—that in no other sense can we *cure* disease than by availing ourselves of these properties of living matter. It is no derogation of the therapeutic art thus to wait upon Nature and to assist her in carrying out her work. It requires a far greater range of knowledge and a much riper judgment to analyse, isolate, and eliminate disturbing factors in disease, to patiently and intelligently observe the evolution of a morbid process, to guide a patient through the dangers and difficulties which hinder recovery, and thus to smooth the way for Nature, than to employ empirical remedies according to rule-of-thumb. It is a comfortable doctrine that every disease has its special remedy; it is so easy to look up a morbid condition in an index, and to find some drug confidently recommended in the page referred to. Dogma has its sphere of usefulness, but those who know most will always employ it with most reserve. The best type of modern medicine has not added much to our stock of specific remedies, but has done a great deal to shake our confidence in many that were formerly trusted. The remedies of to-day, while simpler in their nature, are wider in their application and more effective in their action than those of the past, and rest upon principles which ever tend to become broader and more inclusive as our knowledge extends.

Chronic disease occurs under one or more of the following three conditions:—

1. As a sequel of acute disease.
2. From a gradual yielding, even in the presence of a practically normal environment, of tissues or organs which are congenitally defective in structure or function.
3. From a gradual yielding of primarily healthy tissues or organs, in the presence of a faulty environment.

On applying the therapeutic principle which I have already laid down to these different types of chronic disease, it is clear that in the first two the fault lies on the side of the tissues, and our aim must be to promote and encourage a better and a healthier nutritional activity. In the early stages of the third group we may often limit our interference exclusively to the removal or neutralisation of the external disturbing conditions, and trust to the native recuperative power of the bodily system to do the rest. In the later stages however (which form the larger proportion of chronic diseases which come before us for treatment) it will be necessary to bring our therapeutic machinery to bear both upon tissue and surroundings for all it is worth.

Turning now to more immediately practical details, I hold that our investigation of chronic diseases might and ought to be much more complete and systematic than is usually the case, especially during the early stages Chronic disorders, for the most part, develop very slowly, and are rarely sufficiently well-defined in the first instance to admit of being referred to the recognised types of the text-books. By the time this has occurred it more often happens that the disease has laid such hold upon the patient that there is little hope of being able entirely to remove it, owing to permanent structural changes which have taken place. The time to treat a chronic disorder with really good prospect of success is obviously in its ill-developed, indefinite, and unclassified early stages, while the trouble is still only of a functional nature. But it is just under these circumstances that we find so little to guide us towards a diagnosis; the subjective complaints of the patient are so vague and diffuse, and the objective signs of disease are so obscure, so subtle, and so elusive, that the only way of detecting them is by a formal and systematic investigation of every organ and function of the body in turn so far as our knowledge permits. And yet how seldom is this carried out! There is no department of pathology which is in greater need of being worked up than that which concerns the early antecedents of well-recognised, fully-developed chronic diseases. There is no direction in which careful research would be attended with brighter and better prospects of advancing the art of healing than by the collection and classification of facts bearing upon the beginnings of disease instead of spending time in the vain search for new remedies for fully-developed organic disease. Surgery has achieved her triumphs in devising means of removing with success almost every accessible organ in the body, which by reason of its structural defects has failed to do its own work and is disturbing the peace of its neighbours; but a greater triumph will fall to the share of practical medicine when it shall have succeeded in detecting and removing the morbid antecedents of those structural disasters which provide the surgeon with his working material. And that such will one day be done, at least in part, is my honest and firm conviction. For instance, a few steps further in our knowledge of the pathology of uric acid and other calculous deposits, and of the constitutional conditions which make for them, and it would be possible to render the operation for stone comparatively infrequent.

It is, of course, a mere platitude to speak of the importance of careful and complete investigation of cases we are called upon to treat; but I do desire to enforce the statement that care and completeness should not be allowed to wait upon and be measured by the urgency of subjective complaint, as too often happens; since a painstaking systematic enquiry of what is called a "minor ailment" will often elicit information, not only of value for the purpose of immediate treatment, but of still greater value as a key to the prevention of more serious trouble in the future. With this end I think we should avail ourselves more than is customary of modern instruments of precision, and the help afforded by chemical, microscopical, and bacteriological research. I refer to such matters as the estimation of blood pigment and corpuscles; microscopic examination of the blood with differential staining; chemical examination of stomach contents after a test-meal which goes beyond the application of a few colour tests, and aims at the determination of the exact amount and quality of digestive work done by the stomach; and various bacteriological tests in such cases as require them. Again experience shows that the analysis of urine might in many cases be extended with untold advantage beyond the ordinary qualitative tests for albumen and sugar. Thus, Dr. Saundby has called attention to the importance of urea estimation as a means of distinguishing certain varieties of diabetes insipidus; and I might cite many other illustrations did space permit. Also much help might be sometimes derived by ascertaining the toxicity of the urine, a subject which has received a good deal of attention of late in certain clinical laboratories.

Then again, it is now possible, with a specially constructed dynanometer to record a patient's strength with reasonable accuracy in respect of all the principal muscular groups, and the results when charted show at a glance how he stands in relation to an average person of the same sex and height, not only with regard to his total strength, but to the relative strength of every part of the body. Results thus obtained are invaluable as a guide to the prescription of exercise, showing what parts of the body need it, and in what degree. Recent researches have also shown the paramount importance of muscular weakness in the causation of many minor deformities, dyspeptic and pelvic troubles.

It is obvious that in order to carry out many of the details in such investigation as that I have indicated, we need the facilities of clinical laboratories where researches could be conducted by trained assistants at a minimum cost. I can conceive no way in which the interests of public health might be more readily advantaged than by the establishment of laboratories of this kind over the country—at any rate in all the principal towns—with a tariff as low as compatible with efficiency. The popularity and rapid success achieved by the clinical laboratories already established—on more restricted lines than could be desired—show the large demand that is growing up for this sort of thing, and proves that it might easily be made self-supporting.

With regard to the means at our disposal for treatment, space does not permit of more than a brief indication of a few leading principles. First and foremost come the causal indications, and these can only be obtained by extremely careful inquiry into and consideration of the family and personal history of the patient, his temperament and mental characteristics, the quality and amount of his food and drink, his habits of life, and external surroundings. Some such inquiry is of course always made, but it is apt to lack in systematic completeness, and is not by any means always conducted with the deliberate intention of discovering the factor or factors of causation. I would urge the desirability in all cases of attempting to frame a coherent hypothesis of probable causation, with a view of deducing causal indications for treatment and of giving such indications absolute precedence of all others. No doubt it sometimes happens that the causes of chronic disease elude discovery, and, still more often, that causes when discovered cannot be adequately dealt with owing to deficient knowledge; but this does not affect the general principle that our primary aim in the treatment of chronic disease should be to search for faults of constitution and environment with a view to their removal and correction.

Having done what is possible in this direction according to our knowledge and opportunity, our next object is clearly to redeem and recover our patient from the morbid state into which he has drifted. It is not merely that he requires some improvement in the condition of his heart, stomach, kidneys, or any other single organ; the primary functions of the body as a whole have become perverted, and his tissues as a whole demand a radical renovation and rebuilding on healthier lines. He needs to be trained and educated, so to speak, out of the abnormal condition into which he has fallen. For this purpose the resources of pharmacy are a snare and delusion. The *rôle* of medicine is very much more restricted than is the case with acute disease. We possess a few specific remedies, it is true, such as mercury and potassic iodide in syphilis and quinine in malaria, but otherwise drugs never take higher rank than that of adjuvants of more or less value, and the indications which they fulfil are almost invariably of quite temporary duration. If long employed they usually do more harm than good. I might go further and give utterance to the paradox that in proportion as medicinal remedies give relief they are likely to hinder the cure of chronic disease, for it is certain that the chronic headache which is promptly removed by antipyrin, the hyperpepsy which is relieved by antacids, the constipation which is overcome with aperients, the exhaustion which is conquered by stimulants, tend to divert attention from the primary causes of such ailments, which continue to operate, though their manifestations are masked, until time brings about the establishment of really serious disease.

In proceeding to the *cure* of our patient in the sense I have described, we have to take care that it is carried out under suitable external conditions as to climate, fresh air, light, good sanitation, and favourable personal surroundings—considerations which are sufficiently well recognised to need no further comment now.

As to the actual therapeutic measures to be employed, it will be seen after what I have said, that our reliance must be placed exclusively upon what are termed general remedies; namely, rest, exercise, diet, hydrotherapy, thermic appliances, and electricity. In a broad sense we all recognise the importance of these remedies, and in some degree every practitioner makes use of them. But what I think is not so generally realised is the recent enormous advance which has been made in our knowledge of the physiological action of such remedies, the immense improvements which have taken place in the variety and method of their employment, and the extraordinary potency of their influence upon the nutritive processes of the body when carried out under suitable conditions, and in judicious association. And is it to be wondered at? There is no adequate provision, in any of our hospitals, of the equipment which is necessary to conduct these methods of treatment, and therefore neither teachers nor students have any opportunity of familiarising themselves with the subject, apart from the information to be picked up here and there from the published papers of specialists who practise under more fortunate conditions for gaining this kind of experience. In a few favoured health resorts, it is true, there are limited facilities for one or more branches of general treatment, and in spite of the inadequate equipment many patients are sent there, sometimes with excellent results. It requires no words of mine to expose the unsatisfactory nature of such a state of affairs, and the hindrance to the progress of our art which it entails. There is not an intelligent practitioner who does not almost daily find it next to impossible to provide the treatment for many of his cases which he knows they require and ought to have.

There is only one way in which the difficulty can be really overcome and that is by the establishment of Sanatoria provided with all the aids that modern hygiene, sanitation, and scientific medicine can devise for the treatment of chronic disease, under medical control, and only available on proper medical recommendation. In America the experiment has been tried on a commercial basis, and is already at work on a large scale in various centres with astonishing results. They are more than self-supporting, the surplus earnings being expended in the gratuitous treatment of the sick poor on similar lines. There can be little or no doubt that if the idea could take root in our profession here, and be well ventilated, and if the public could be got to grasp the notion of the advantages to be derived from such institutions, it would not be long before they would be established either by public or private enterprise. I do not for one moment suppose or suggest that all cases of chronic disease should be treated in a Sanatorium. On the contrary, a large number of minor cases could be treated at home when once the principles of Sanatorium methods had become thoroughly understood and mastered by the profession at large. But for regular chronic invalids we must all have felt at one time or another the futility of treatment of any kind without a much more complete control of our patients than is possible so long as they remain at home.

Much of what I have said is no doubt trite and commonplace, but my main purpose will have been attained if I have made the following points clear:—

1. That the present treatment of chronic disorders is lamentably unsatisfactory.

2. That this is due partly to a want of systematic completeness in the usual modes of investigating such cases, especially in their early stages; partly to insufficient knowledge on the part of the profession at large as to the best plans of general treatment; and partly to the want of adequate provision for carrying proper treatment into effect.

3. That our hospitals should be much better furnished than

they are at present with the means of general treatment, so that students might acquire an up-to-date practical knowledge of the subject.

4. That there is a real need for the establishment of fully equipped Sanatoria, available for the treatment of chronic disease, on medical recommendation and under direct medical supervision.

ON CASES OF DELAYED LEAD-POISONING.

BY O. J. KAUFFMANN, M.D.

THE following cases of Plumbism present the common feature that the symptoms arose some time after the patient was removed beyond the possibility of ingesting the poisonous metal :—

Case 1.—H. J., male, aged 45, had for 14 years been employed at paint mixing, entailing the constant handling of white and red lead. He left his work at the end of 1895, in consequence of a persistent attack of lead colic, from which he had commenced to suffer in October of that year. Ten years before this, during his active employment, he had had three "epileptic fits," which seized him in the workshop, occurring in close succession one after the other. He was not very ill in consequence of these fits, and returned to his work the next day. Neither before nor after these convulsions had he ever suffered from a similar seizure.

For nine months after leaving his place he was out of all employment, in poor circumstances, and short of food, but remained perfectly free from all symptoms of plumbism. At the end of this term he was again seized with colic resembling his previous attack, and of gradually increasing intensity, the paroxysms leaving behind them the usual fixed and aching abdominal pain. At the end of October, 1896, he applied for relief at the out-patient department of the Queen's Hospital.

When first seen he was sad- and depressed-looking, sallowcomplexioned and pale, with somewhat anæmic mucous membranes, and well-marked blue lines on the upper and lower gums. He was not collapsed, and showed no trace of paralysis, tremor, or other nerve affection, but suffered from paroxysms of abdominal pain. He attributed his reduced state to mental depression and insufficient food. There was no albumen in his urine, which secretion was in every way normal to the ordinary tests, nor was there any dropsy. He was advised to get some light employment at once (in which he succeeded), and was put upon daily quantities of 30 grains of iodide of potash, which he continued till the beginning of February, 1897, *i.e.*, for about three months, and a daily dose of confection of sulphur. During this time, being in regular receipt of wages, he also fed much more liberally than before, and in the end he was in good health and had entirely lost his anæmia and abdominal pain. The blue line, however, persisted; the urine continued normal.

Case 2.—E. M., a young woman, was seen by me together with Dr. Ravenhill. She was employed in a factory where, in consequence of the Directors' attention being drawn to the danger arising from lead-salts this metal had been discarded for several months before the patient had entered as an employée in July 1896. She had been seized, four days before I saw her, with violent colic, headache and vomiting, and epileptoid convulsions followed by coma; then, after a short return to consciousness renewed convulsions and coma had ensued. When seen she was exhausted but conscious and rational, and free from all pain except a little tenderness in the abdomen. Since the commencement of the attack she had passed very little urine. The quantity, owing to her poor surroundings, could not be measured, but the specimen I saw was concentrated, reddish yellow, and free from albumen. It quickly deposited a quantity of urates without uroerythrin. There was no blue line, but her teeth were perfectly clean and free from tartar; no tremor, no retraction of the belly, and no paralysis, motor or sensory.

Her history revealed that she had been employed in an enamel factory in another town from the autumn of 1894, and had then worked with lead-salts. In the spring of 1895 she had an attack resembling the one just detailed, and was ill for 14 weeks after it. She then returned to her work and continued at it without any recurrence of either colic or epilepsy or other symptom of plumbism till she entered on her present employment. At this likewise she had enjoyed good health until the sudden onset of the seizure just described.

An analysis of the urine kindly carried out for me by Mr. McMillan, Lecturer on Metallurgy at the Mason College, revealed a small quantity of lead which seemed to have been mechanically carried down by the precipitated urates. This patient made a good recovery in the course of a few weeks.

Case 3, seen in July, 1897, was that of a man aged 34, wasted and half-starved looking. He had a well-marked blue line on the gums. Up to the previous Christmas he had worked at a chandelier factory, and had ceased owing to a severe attack of lead colic. Since that time, being out of work, he had been unable to obtain sufficient and proper food, and a few days before applying at the Queen's Hospital had suddenly been attacked with double wrist-drop This seizure occurred in the night, he having, according to his account, gone to bed in possession of complete power in his hands. This patient, too, gradually improved under appropriate treatment.

The common feature in these cases is this: that the symptoms of plumbism appeared in each instance some time after the sufferer had ceased working in lead, *i.e.*, the patients were no longer ingesting the poison when the symptoms asserted themselves. In this connection it must be noted that after most careful inquiry there was no room for questioning the absence of lead from the surroundings of patient No. 2.

This unusual delay in the appearance of the symptoms must be considered together with two facts in the history of plumbism; the first, that many workers in lead-salts maintain good health for years before beginning to suffer (many, indeed, escape entirely), although they must daily ingest considerable quantities of the poison; the second, that sufferers from saturnism often have long and complete intermissions between successive attacks, though they continue at their work.

To explain all these features reference must be made to the behaviour of lead within the human body. Much of the lead which has obtained entrance to the alimentary canal is excreted with the fæces without entering the blood. That, however, which enters the blood stream is ultimately excreted by way of the urine and the bile. But in spite of the fact that two channels of excretion are open, the metal is removed only very slowly, and it probably requires several days for a single dose of lead-salt absorbed into the blood stream to be excreted by the kidneys and liver. During the period, then, for which the lead remains in the body, what becomes of it? Directly upon entering the blood it forms a combination with the protoplasm of the blood cells, which combination is, however, of brief duration, since a short time after the ingestion of the dose the blood no longer gives the reaction for lead.* The metal then has entered the solid tissues, forming a fairly stable combination with the cellular protoplasm. All this has been proved many times, and that lead is absorbed from the gastro-intestinal tract and deposited in the tissues is shown by the experiments of Heubel,† and later, of Oliver.‡

In animals poisoned by lead the various tissues and organs are found to contain the metal in the following order of diminishing amounts: bones, kidneys, liver, all showing much lead; brain and spinal cord, containing but little of the metal; and muscles and blood containing mere traces.

It is highly probable, therefore, that all persons exposed to the dust or vapour of lead contain at any moment, even when to all appearances in good health, a considerable quantity of the metal fixed in protoplasmic combinations in the bones, liver, and kidneys; and that, while so fixed, the poison never evidences itself by the more characteristic symptoms of plumbism.

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* Nothnagel und Rossbach, Arzneimittel Lehre.

† Nothnagel und Rossbach, *l. c.*

‡ Goulstonian Lectures, 1891.

Whether slowly progressing anæmia and vague bone and muscle-pains and progressive endarteritis are referrible to such fixed lead must at present remain an open question, but is, I think, probably the fact.

Meanwhile, in the course of ordinary tissue metabolism these lead-combinations are broken up, lead again enters the lymph of the blood on its outward course and is excreted by the kidneys, ordinarily without causing any untoward symptoms. Dr. Oliver* has expressed the opinion that symptoms of plumbism arise only when, in consequence of prolonged excretion of the poison, the kidneys are organically damaged and are rendered incapable of performing their normal excretory functions, and that it is the blood-intoxication, not by lead, but by urea or urea-forming substances, which provokes the symptoms of plumbism. This explanation is very likely true in chronic cases or in the acute cerebral form of poisoning, as was pointed out by Traube, but in such conditions as the acute paralysis occurring in Case 3 it appears more probable that the poisoning is the direct effect of an over-large amount of lead in the blood acting on the nervous elements concerned in the paralysis.

It is generally accepted that a state of partial starvation promotes the rapidity of onset and the severity of saturnine symptoms. It is recorded (Oliver, Goulstonian Lectures) that persons entering upon the day's labour at a lead factory without first breakfasting run materially greater risks of being poisoned than those who take a meal before beginning work, and this is attributed by Dr. Oliver to the fact—ascertained by experiment—that lead is much less soluble in gastric juice in the presence of proteid matter than in the pure gastric juice. The fact may, however, be explained somewhat differently, namely, thus: During the hours of work on an empty stomach considerable tissue-metabolism must go on—a metabolism which need not necessarily be indicated by any appreciable loss of weight. By means of these metabolic changes a considerable quantity of lead, hitherto existing in harmless combination with cell-protoplasm, may be set free in the blood and produce symptoms of poisoning General poorness of feeding, by causing loss of flesh, will operate in the same manner.

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* *L. c.*

In the first and third cases related in this paper, scanty feeding and loss of flesh were prominent features, and gradual improvement commenced under dietary and medicinal treatment. In the case of the female patient there were no data obtainable regarding her mode of life, but the poverty of her surroundings lent colour to the view that her feeding might have been haphazard, if not positively insufficient.

A further point of some interest may arise in connection with such cases as these, namely, the medico-legal. In one instance nine, in the other seven months, and in the third six months, had elapsed during which the patients were in no way exposed to the ingestion of lead, and in each of them, after this comparatively long period, there were symptoms of plumbism, lead being found in the urine in one.* It is needless to point out how readily and naturally these circumstances might be taken as indicating recent ingestion of the poison, and lead to much fruitless work in the endeavour to find the source of the intoxication.

A MODERN SOCIAL PROBLEM.

BY HENRY MAY, L.R.C.P.

LATE MEDICAL OFFICER OF HEALTH FOR ASTON MANOR.

SOME things are left unsaid because good taste or good manners call for a judicious reticence concerning them, and others because a feeling of shame attends their recognition and acknowledgment. There is probably a sufficient explanation in one or other of these sentiments for the atmosphere of silence which envelopes one matter in which important interests of society are involved. I refer to the present aspect in which family additions by the birth of a child are regarded, and the various consequences, individual and social, which follow.

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* It was not searched for in the other two patients.

This modern sentiment may not come very often above the surface, but it has become none the less a deeply rooted one. Other times, other manners. The schoolmaster has been abroad. The doctor of the family is obliged to take cognizance of sentiments and usages to which his attitude twenty years ago was one of active hostility, but is now an armed neutrality, if not toleration. It is necessary that the medical man should be *au courant* on all these matters, on which he must not only think but on occasion act, and the facts on which our judgments and conduct are based need not be regarded as beneath discussing because they are not pleasant.

It is scarcely necessary to say that extensive celibacy for the repression of population is absolutely necessary as one of the conditions on which depends the well-being of the human race, nor that the married state, with the family ties and duties it involves, is the best one for individual happiness. Flourishing races and well-ordered communities are the result of harmony between these opposite conditions. "The presence of reason in man gives him certain prerogatives by enabling him to control fertility and ward off the blows of disease."* In the exercise of the first of these prerogatives he has a field for the exercise of some of his noblest virtues and some ignoble vices.

It is obvious that there exist different social expedients and usages subservient to this end, and varying according to place and time. The most remarkable instance is the voluntary sterility, the *infécondité volontaire* of the French nation, which has caused the population to remain stationary for 12 years, in striking contrast with the expansion of the prolific Anglo-Saxon race in the same period.

It appears as if the increase in population of this country under 5 had now received a great check from the same cause. The statistics of the Registrar-General as to the births, marriages, and deaths of England and Wales show a decline in the annual birth rate from 36·3 per 1000 of the population in 1876 to 30·2 in 1890. This is equal to a diminution of nearly seventeen per cent., fully a sixth of the births in fifteen years. Some recovery took place in 1891, but it has fallen lower, viz., to 29·7 in the two years 1896-7, and will probably fall lower still. In some localities, especially where the birth-rate had previously ruled high, this decline has been more accentuated. In Aston Manor, for example, the fall in the fifteen years was thirty per cent. As the national birth-rate had been fairly stationary at a high level previous to 1876, it may be safely assumed that the active change in sentiment through which the births were restrained set in that year and has been fully twenty years in operation.

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* Dr. Newsholme, Vital Statistics.

It is remarkable that the marriage rate of the country also made a strong movement of descent at the same time. After having been at a varying high level for nearly twenty years this rate fell from 17·6 per 1,000 persons in 1872 to 14·4 in 1879, and has maintained an average low level for the last 20 years. If the average annual rates for the periods 1858-77 and 1878-87 are compared, viz., 15·7 and 16·1, there is a difference between them of about 10 per cent. There has also been a corresponding tendency to a moderate extent to delay marriage later in life, and a falling-off in marriages under age. The proportion of illegitimate births has at the same time shown a considerable reduction. The marriage rate has begun to rise during the last year or two, but the high water mark of the later period has only just passed the low water mark of the previous one.

Various explanations may be found for this lessened appreciation of marriage, though scarcely the old one of a diminished abundance of the necessaries of life. Whatever causes contributed towards the falling off in the births, it is a reasonable hypothesis that it was in part a development of an aversion to maternity. The cumulative effect on the birth-rate of 10 per cent. less marriages for twenty years would probably be about 10 per cent. less births, and the total fall of 17 or 18 per cent. may be regarded as the measure of the direct effects on the birth-rate of the indisposition manifested to child-bearing, plus the indirect effects of the indisposition towards matrimony.

The 19th century approaches its close at its highest development of material comfort in this country, but with more celibacy, fewer marriages, still fewer early marriages, fewer births per marriage, and fewer births outside marriage than in the times of less prosperity and dearer food. (Public Health, Nov., 1898.)

To whatever extent this restraint upon fertility is brought about by increased celibacy it is legitimate, but neither induced sterility nor abortion can be so regarded. The strictness of professional etiquette forbids medical men from divulging family secrets, and their lips are therefore sealed upon these matters, but those now in practice who were so when the present generation of fathers and mothers were born will bear witness that their arrival was regarded as a blessing, and there were none of those suggestions then as to preventing the calamity of pregnancy or child-birth, such as are not uncommon now. There are no statistics concerning still-births, but the evidence of the death registers shows that the annual deaths from abortion and miscarriage have risen from 6 to 14 per million females in ten years, and those assigned to premature births are steadily increasing. Neither have the chances of infants' lives been in any way improved by the comparative rarity of births. It appears that in a recent case of blackmailing by threats of exposure for having "attempted to prevent birth," about 600 victims came to light in a few days. Investigations are now much more frequently reported in the newspapers as to fatal cases of induced abortion than formerly was the case.

Whatever the state of the private conscience, the public conscience appears right in these matters. The avoidance of childbirth after matrimony is not legitimised. There is still a disposition to have the aiders and abetters of abortion punished. It is more satisfactory still that the feeling and conduct of the medical profession continue not only above reproach but above suspicion. The one or two notorious exceptions only serve towards proving the rule. Could those 600 victims have obtained the service they sought at home would they have gone so far a-field? *A priori* the attitude of a profession whose instincts and aims are to prevent suffering, lessen disease, and prolong life, could not be in favour of preventing or destroying it.

It is impossible to dogmatise as to whether this modern undercurrent towards restraint of fertility makes absolutely for good or evil to our individual or collective interests. From the narrow point of view of the former the balance may sometimes be in favour of its utility apart from its danger, but even if it had medical science and skill to help it, which it has not, the dangers would still be great. In the collective interest it does not appear to be of any use, while emigration affords an ample outlet for the overflow of the population It is the object of this paper rather to call attention to the existence of this social problem and the evidence as to its extent and consequences, than to enter upon its philosophical and ethical aspects, and even within its limited field I feel this work is most incompletely done.

MASTOID DISEASE.

BY A C. OLDHAM

Mr. President and Gentlemen,

In introducing the subject of Mastoid Disease I do so, not only from having two or three successful cases under my care lately, but also with the hope that my few remarks on the subject may prove interesting as well as beneficial to my brother practitioners here present. Affections of the Mastoid are usually divided into—

Acute Inflammation of the Mastoid or Acute Mastoiditis,
Chronic Mastoiditis, and
Periostitis of the Mastoid.

Acute Mastoiditis sometimes occurs in old cases of perforative otorrhœa, where the exciting cause is cold It may occur from sea bathing, owing to some of the sea water entering the tympanum; from inflammation spreading up the Eustachian tube into the tympanum in the sore throat of scarlet fever, this being probably the most frequent cause. It occasionally follows the specific fevers, and as a sequel to influenza. The symptoms are mostly those of acute middle ear disease, with which it is often combined, the leading ones of which are fever, agonising pain of a throbbing character over the whole ear, but especially referred to the mastoid process, unilateral deafness, and movements of the jaw intensely painful. The glands about the parotid region are usually swollen, and the sufferer, if a child, is generally in a shrieking condition, with the hand over the affected part. There is great tenderness on pressure over the mastoid process, and when the periosteum becomes implicated redness and shining over the soft parts; the auricle is pushed away from the head, and the meatus partially obliterated by the inflammatory swelling. The treatment of this very painful affection will be referred to again in detail, but it will here suffice to say that the sooner an opening is made into the inflamed bone, and more particularly into the mastoid antrum, the better, the almost instant relief to the distressful pain and train of symptoms being really marvellous.

Chronic Mastoiditis is usually accompanied with a certain amount of necrosis and accumulation of cheesy débris. It occurs from most of the causes mentioned in the acute form, but more especially after measles and scarlet fever, and in adults in bad cases of syphilis, tuberculosis, and diabetes. The symptoms are swelling and a certain amount of tenderness over the mastoid process, a more or less constant discharge of foul pus from the auditory canal, and it may be from an opening in the process itself. If long continued, signs of ill-health, such as wasting, will be noticed.

Periostitis of the Mastoid is frequently associated with osteitis, necrosis, or caries in the bone beneath. In uncomplicated cases an incision down to the bone usually suffices to effect a cure, and large doses of iodide of potassium in the syphilitic variety will rapidly cause it to disappear.

Before mentioning the treatment let us refresh our memory by glancing at a few of the anatomical points of the mastoid process. In the infant the mastoid as a process has no existence, but in the mastoid segment of the petrous bone is a single air cell, the mastoid antrum opening into the posterior portion of the tympanum, its outer wall being extremely thin, and therefore easily reached by operation.

About the second year the mastoid process becomes visible, and by the growth of bone the antrum becomes more and more deeply placed, so that in a child of nine years this cell is about one cm. from the surface. At this period no other air cells exist, but at puberty an extensive series of such cells develop, the antrum, about the size of a pea, lying in the centre of them, its outer wall being from half to three-fourths of an inch from the external surface, and its posterior end from three to six mm. from the lateral sinus. The facial nerve passes close to the mouth of the antrum, and may be involved in mastoid disease. The close proximity of the lateral sinus may lead to its thrombosis and infective phlebitis.

The mastoid inflammation may also spread through the antrum roof to the membranes of the brain; producing meningitis, and it may even go further and produce an abscess in the brain substance, which is generally situated in the tempero-sphenoidal lobe of the cerebrum or less frequently in the cerebellum. Externally we have the posterior auricular artery close to the auricle, and the above-mentioned lateral sinus behind the posterior portion of the process.

After reviewing these anatomical details before our minds we next come to the most important part of our subject, namely, the treatment of mastoid disease.

In the first place, it is as well to bear in mind that such simple measures as syringing the ear with an antiseptic lotion, and filling the ear with boracic acid or other powder, in the hope of checking the discharge, is utterly futile. No doubt these measures in simple uncomplicated cases of middle ear disease would prove beneficial, but when the mastoid is involved nothing short of an opening into the mastoid antrum would be of the slightest service to the sufferer.

The antrum is defined by the point of junction of two lines, one along the upper margin of the meatus, parallel to Reid's base line, and the other a vertical line drawn a quarter of an inch behind the centre of the meatus. The chief danger to bear in mind is the close proximity of the lateral sinus, which approaches as a rule to a point three-quarters of an inch behind the meatus centre.

The chief steps of the operation are as follows:—A curved incision is made one-third of an inch behind the insertion of the auricle, leaving the antrum about its centre; the periosteum is reflected backwards and forwards for about half an inch, and the instrument selected to open the bone is then used.

With the anatomy of the past in our mind, it is quite obvious that in young children a small gouge will readily pierce the shell of bone over the antrum, but in older children and adults, and especially when the bone is sclerosed, a small trephine, or what is safer, a gouge and mallet, will be found necessary. The opening in the bone is made in a direction downwards and forwards parallel to the auditory canal, a probe being kept in the latter for guidance. When the bone is extremely diseased it is better got at by detaching the auricle posteriorly and turning it forwards. Having reached the antrum, all the diseased bone and débris should be thoroughly scraped away with sharp spoons, the opening into the middle ear enlarged if necessary, the ossicles if diseased and the remains of the drum also being scraped away, any hæmorrhage being easily controlled with hot water. The mastoid is then well flushed out, the hot water usually flowing out of thè meatus; the cavities mopped out with pure carbolic acid, a little antiseptic powder put in; both the meatus and the opening in the mastoid plugged with iodoform gauze, an antiseptic pad and bandage completing the operation It will be seen that in opening the mastoid great care must be taken to avoid wounding the posterior auricular artery and the lateral sinus, and when the antrum and mastoid cells are reached care must be taken to avoid injuring the facial nerve or the dura mater and brain in the temporal fossa.

I myself have never seen a wound of the lateral sinus, but to quote from Marmaduke Sheild—"Wound of the sinus is at once known by the profuse hæmorrhage, the jet of dark blood reaching to the height of several inches. The accident, though alarming, is by no means fatal, and if the opening be plugged with iodoform gauze the hæmorrhage is easily controlled, and healing will probably take place." Needless to say, in spite of this reassuring statement, an accident of this kind is to be avoided in every possible way. The after treatment consists of removing each day the plugs of iodoform gauze, gently syringing the cavity with an antiseptic lotion, placing in a little antiseptic powder and replugging, till finally the cavity becomes obliterated by granulation tissue. The greatest care must be taken, not only at the operation but also during the after treatment, to maintain the strictest antiseptic precautions possible, as the entrance of any of the pyogenic cocci would start the disease once more and render your labours useless. A word or two now as to what is the best antiseptic to use under these conditions.

Bearing in mind the importance of having a certain germ-killer, it must be remembered at the same time that the antiseptic required must be as non-irritating as possible, to allow of the development of the granulation tissue. For this ideal antiseptic surgeons have long waited, but as far as my scanty experience goes, I think it is found in the compound I am now going to speak of.

As probably most of you here present know it already very well, I shall dismiss it as briefly as possible. It is called Chinosol, a yellow powder, readily soluble in water, non-volatile, does not coagulate albumen; and when I mention that an aqueous solution of 1 in 1000 kills the staphylococcus pyogenes aureus in ten minutes, it will give you a very good idea as to its germ-destroying properties. In a word, it is almost as efficient an antiseptic as corrosive sublimate without the latter's toxic properties, and it is almost as non-irritating as boric acid, with which it is usually combined in the proportion of one part in seven as a dusting powder.

I have used Chinosol in the last case of mastoid disease I have had under my care, and from the operation to the end of the treatment I could not detect any trace of pus whatever. The improvement both locally and constitutionally that follows this operation for mastoid disease is very marked, the otorrhœa ceases, and the patient rapidly puts on flesh and strength; and when the proper precautions are taken I do not know any other surgical operation that has a greater certainty of cure, combined with freedom of risk, than the one I have I am afraid very inadequately considered this evening.

Gentlemen, I thank you for your patient hearing of this paper.

REPORTS OF CASES.

A CASE OF TRAUMATIC PONTINE HÆMORRHAGE.

BY W. E. BENNETT, F.R.C.S.
LATE RESIDENT SURGICAL OFFICER, GENERAL HOSPITAL.

By the kind permission of Mr. Chavasse I am able to give a few notes on the following case, which is of interest in that it is a case of hæmorrhage into the Pons Varolii, traumatic in origin, accompanied with sub-dural extravasation of blood, and occurring in a boy 17 years of age. The patient was admitted into the General Hospital at 11.15 p.m. on July 1st, 1897. He was in an unconscious condition, and we were unable to arouse him; his breathing was stertorous, 14 per minute; temperature 97°F.; pulse 38, regular, full, and incompressible; his pupils were dilated and equal; there was no deviation; he was unable to swallow, and had passed fæces involuntarily. There was paralysis of both upper and lower extremities, reflexes being absent. There was slight occasional twitching of the left leg and thigh. The face was bruised, especially the nose, from which blood was still running. At the point of the chin was a large bruise, and a similar effusion of blood beneath the tissues at the left angle of the jaw. There was bruising over the præcordia, and also at the back of the head over the occipital protuberance. There was neither hæmorrhage from the ears nor sub-conjunctival ecchymosis. *His history* was that he had been engaged in a boxing competition which had taken place that evening immediately before his admission. The boxing match was with gloves 4 oz. in weight, and had proceeded to the fourteenth round when he was knocked down by a blow on the left angle of the jaw. He fell in a semi-conscious condition, but was aroused sufficiently to get on to his feet and again face his opponent before being counted out. He was able to stand up, but in a very sleepy, dazed condition, and with one blow over the heart from his opponent he fell and became immediately unconscious. This comatose condition persisted until his admission to the hospital half an hour afterwards. When he fell after the second blow, and it was found impossible to arouse him, the medical man in attendance injected a syringeful (½ dram.) of ether. This had no effect. He was then removed to the hospital in the condition above noted. He was put to bed, and on the hypothesis that the condition was one of shock or vagal inhibition, a general stimulating plan of treatment was adopted, viz., the application of blankets and hot-water bottles, liq. strych. ♏ 5 being given subcutaneously and nutrient enemata administered per rectum. He remained in the same condition during the night except that the movements of the left leg became slightly more marked and rhythmic in character. At frequent intervals he broke out into a profuse perspiration. His temperature rose gradually until at 6 a.m. the following morning it became 107° F. His head was shaved and calomel administered (grains 5 by an œsophageal tube in a little peptonized milk). His temperature came down to 102° after tepid sponging; it again rose in the evening to

107·4° F. The pulse varied with the temperature, being when the temperature was highest 180 per minute, the respirations rising at the same time to 84. The pupils remained dilated. On July the 3rd the patient was still in the same condition, and remained so but for the occurrence of rhythmic movements of the right leg. His temperature was 100° F. in the early morning, but rose gradually during the day; at 8 p.m. it was 105° F., at which point it remained until his death which occurred at 10.15 p.m., just 47 hours after admission. Cheyne-Stokes breathing came on three hours before death.

Post mortem examination.—There were bruises of the left shin, left forearm, both hands over the knuckles, over the præcordia, the point of the chin, the left angle of the jaw, the nose and the back of the skull. The general condition was good, there was very little fat in the tissues. The muscles were well developed. The organs generally were healthy excepting the *heart*, the right side of which was empty; there was no valvular disease; the capillaries of the heart were very much injected and showed numerous ecchymoses beneath the visceral pericardium; the capillaries of the aorta were injected. The lungs were healthy except that the bases were collapsed and engorged. The *brain*: There was considerable sub-dural hæmorrhage over the surface of the right hemisphere occupying chiefly the middle fossa and the region of the Sylvian and Rolandic fissures but also extending over the vertex. There was a hæmorrhage into the posterior part of the substance of the Pons Varolii in the middle line about three-fourths of an inch long and half an inch in diameter. At the lower end of this hæmorrhage into the pons was a smaller extravasation, punctiform in character and about the size of a pea; this communicated with the larger one. There was no hæmorrhage into the brain nor into the ventricles other than that described. There was no fracture of the skull.

Remarks.—The boy came of a very healthy family and had never before been ill. He had been in strict training for some weeks before the contest and had previously been engaged several times in similar competitions. There was no evidence of hæmophilia, purpura, scurvy, or any disease characterised by a tendency to hæmorrhage; his kidneys were perfectly healthy, and up to the time of the contest he was in a thoroughly robust condition. It was suggested at the inquest that he had been over-trained, but his father, who had trained him, and was an expert boxer himself, maintained the contrary opinion.

Concerning the diagnosis of this case, it was at first thought probable that the blow over the heart had caused cardiac inhibition, and that the condition of the patient was one of shock and collapse due to it. As the comatose condition continued and his paralytic symptoms persisted, a fracture of the posterior fossa of the base of the skull and extravasation of blood around the medulla and pons were diagnosed. The only focal symptom was the slight movement of the left leg; this was evidently due to the effusion over the right Rolandic area. The absence of eye symptoms and the paralysis of the muscles of deglutition may be explained probably by the hæmorrhage being in the lower part of the pons.

When looking up the literature bearing upon this case I was struck with the number of cases of cerebral hæmorrhage in which a distinct traumatic history could be traced, and at the same time with the paucity of cases of pontine hæmorrhage traumatic in origin.

The origin of the pontine hæmorrhage is obscure. In the following cases I have endeavoured to throw light upon it by illustrating the various anatomical and mechanical factors which may have modified the original violence in such a manner as to produce this extravasation into the cerebral substance.

According to Erichsen laceration of the cerebral hemispheres frequently occurs at the point exactly opposite to that struck. His explanation of this fact is—that the blow starts a wave in the soft cerebral substance which breaks against the bone on the other side, and that in very rare cases it is possible to trace the course of this wave by hæmorrhages into the cerebral substance in its track. He quotes a case in which a man received a blow on the left side of his forehead, and at the *post mortem* examination a bruise of the brain was found in the frontal lobe at the point which first received the violence, and exactly opposite this was another bruise in the right occipital lobe. In a straight line between these two bruises was a hæmorrhage into the right optic thalamus.

One case somewhat similar to the one now reported was mentioned in the *Lancet* of 1877 as being under the care of Mr. Spanton at the North Staffordshire Infirmary. In this case a man aged 35 was found at the foot of a wall seven feet in height which formed the termination of the slope of a railway embankment. It was evident from the footmarks in the snow that he had missed his way and had fallen over. He died 73 hours after admission, and on making a *post mortem* examination a hæmorrhage was found in the anterior part of the Pons Varolii in the middle line, this was three-eighths of an inch in diameter and surrounded by a circle of punctiform extravasations. There was also in the substance of the left frontal lobe a cavity the size of a pea filled with recent clot; extending forwards from this was a line of punctiform extravasations reaching to the anterior border of the brain. There was no fracture of the skull and all his organs were healthy.

In this case, if we take it that the direction of the blow and the track of the wave of cerebral substance resulting from it was that line marked by the series of punctiform hæmorrhages which led to the large hæmorrhage in the frontal lobe, we may presume that it continued its course to the pons varolii, causing the hæmorrhages there found and finally impinged on the basisphenoid, which was the part immediately opposite that point first struck.

The man fell 7 feet into the snow, which would account for the heavy diffuse nature of the blow, thus causing a general disturbance of the molecules of the brain resulting in a wave of cerebral substance the direction of which and its track of greatest intensity being marked by the line of hæmorrhages into the cerebral substance. Had it been a sharper more localised blow in all probability a fracture of the skull would have occurred.

It has long been held that fractures of the vault spreading to the base reached their destination by the shortest route without regard to the sutures or the density of the bones involved. In this connection Mr. Hewitt divides the skull into three areas—the anterior, the middle, and the posterior. The middle, the zone corresponding to the middle fossa of the skull, includes the parietal bones, the squamous, and the anterior part of the petrous portion of both temporal bones, together with the greater part of the basi-sphenoid bone. If the force of violence be directed from above, and the fracture resulting thus descends in a definite manner, it is reasonable to suppose that the force of a blow from below upon any of these bones at the base in the middle zone will similarly ascend; in fact, falls on the point of the chin acting through the glenoid cavity have been known to cause fracture of the middle fossa of the skull. In applying the above observations to our own case, if we notice first that the blow delivered on the left angle of the jaw was upwards and to the right, the force would then be conducted through the glenoid cavity and from thence obliquely upwards to the point immediately opposite, which would be in the right parietal bone. The first part of this course would be formed mostly of bone structures, viz., the anterior part of the petrous portion of the left temporal bone, the left side of the base of the great wing of the sphenoid and the anterior part of the basi-sphenoid. From here the nearest route would be through the overlying pons and the substance of the right tempero-sphenoidal lobe and the parietal lobule to the under surface of the right parietal bone. In an older man with more brittle bones a fracture of the base would probably have resulted, and so the force of the blow would have been thus expended without injury to the brain. In this boy of 17 years, with softer bones, and from a blow with a gloved fist, the character of the violence was modified, and if, as we have suggested above, the nearest route from the glenoid fossa to a point immediately opposite was through the bones above mentioned as far as the basi-sphenoid and from thence by the cerebral substance, it is easy to suppose that a wave of the cerebral substance commencing in the overlying pons, may have determined a hæmorrhage into it; the final impact of this wave of cerebral substance breaking against the under surface of the parietal bone thus also caused a rupture of the vessels over the Sylvia and Rolandic fissures of the right cerebral hemisphere such as was found at the *post mortem* examination.

PERISCOPE.

◆

REPORT ON RENAL AND URINARY DISEASES.

BY ROBERT SAUNDBY, M.D., LL.D., F.R.C.P.

DIABETES.

Bouchard. *La théorie pathogénique du diabète.*—(*La Semaine Médicale*, 1898, No. 25.)

Bouchard points out that all sugar is formed in the liver, and that whereas arterial as a rule contains more sugar than venous blood, the blood of the portal vein contains more sugar than the blood of the hepatic vein. This sugar comes from glycogen which is derived from the food carbo-hydrates or the splitting up of the albumen. One grm. of alimentary sugar gives to the body one grm. of blood sugar, and one grm. of digested albumen gives ·558 of blood sugar. This sugar is distributed in the muscles where it is fixed again as glycogen and there undergoes further transformation in supplying energy for muscular contraction. In the other tissues and in the glands it is used up in promoting secretion or heat production. Where sugar is not needed for any of these purposes it may lose part of its water and carbonic acid gas and be deposited as fat in the cells of the adipose tissue where it forms a store of combustible matter and a reserve force for the organism. If the formation of the fat cannot take place sufficiently, the sugar accumulates in the blood, and the same may result if there is any interference in the production of heat or in the development of muscular energy. There is no other source of sugar in the body but the fat, and this is such a small quantity that it might be disregarded. A tenth part of the fat destroyed is formed into sugar, an inconsiderable amount in comparison with that derived from the carbo-hydrates and the albumen of the food.

The quantity of sugar normally destroyed in the body varies with the age of the individual, being much greater in young people than in old ones, but it may be said that an average man weighing 130 lbs. would form in 24 hours 370 grms. of sugar. But the body is capable of destroying a much larger quantity than this, and a young man of 17 years of age was capable of assimilating 670 grms. So that in order that sugar should accumulate in the blood it is necessary that the quantity should be greater than that which has been called the avidity of the tissues for sugar. Bouchard contends that diabetic glycosuria cannot be due to an excessive production of sugar, because it has been known to attain the enormous figure of 1500 grms. daily, and if we add to this the 670 grms. of sugar the young man of 17 years of age was able to consume in 24 hours, we should have over 2000 grms., as produced in 24 hours. This would necessitate an enormous supply of food in which carbo-hydrates would no doubt play the most important part, but when we suppress the alimentary sugar and all the carbo-hydrates the urine of diabetes may still contain sugar, which although in small quantities may still be as much as 200 grms. If we take the modest figures of 500 grms. for the avidity of the tissues for sugar, and 100 grms. for sugar excreted in the urine, we should have a total of about 600 grms. which must be formed from the food albumen. But such an amount would necessitate a consumption of about 10 lbs. of meat daily. If we accept the theory that diabetic diabetes is due to diminished destruction of sugar this difficulty disappears.

The main objection is that if less sugar is destroyed in the body there ought to be less oxygen consumed and less carbonic acid gas excreted. This was what Pettenkofer and Voit at first stated was the case, but they have since altered their opinion, and admit that the respiratory quotient in diabetes is about normal.

The second objection is that the increase of urea in diabetes would indicate an acceleration rather than a retardation of nutrition. Bouchard thinks that perhaps the diminished destruction of sugar leads to an increased destruction of fat, and that in this way the respiratory co-efficient is raised to normal.

Lépine, R. *Traitement diététique du diabète.*—(*La Semaine Médicale*, 1898, No. 40.

Lépine says the object of treatment is to combat the hyperglycæmia. To attain this we have three means: (1) to diminish by diet the quantity of carbo-hydrates; (2) to favour the increase of glycolytic energy by muscular exercise, by opotherapy and certain drugs, these at the same time contribute to (3) diminish the formation of sugar in the organism. He is here concerned only with the question of diet. Strict animal diet has been known since the days of Rollo to have a powerful effect in restraining the quantity of sugar, but numerous experiments have shown that it does not banish the sugar completely, and that there is a relation between the quantity of meat and the quantity of sugar, moreover an excessive amount of meat produces the toxic dyscrasia called acetonæmia. All authors recommend the addition of fat to the dietary of diabetes so far as they can digest it, but Lépine doubts whether any cases of diabetes should be allowed to take as much fat as they please because fat may be formed into sugar.

He does not recommend the total restriction of all carbohydrates except for a limited time in order to study the case, otherwise there is a risk of developing acetonæmia. The cutting off of carbo-hydrates not only diminishes the sugar for the time being but enables the patient later on to take a larger quantity of them.

Bread is the form of carbo-hydrate which is most usually given, and Lépine gives as a rule, ordinary bread in a quantity limited to the capacity of the patient.

With respect to potatoes, as 100 grms. contain as much starch as 60 or 70 grms. of bread, it is easy to determine their relative value. He adds further, that certain fruits do not contain more carbo-hydrates than the green vegetables which are generally allowed to diabetics, and that many fruits contain lævulose which is assimilated by some diabetics in moderate quantities without inconvenience. He says saccharine may be permitted but should not be recommended as it may cause gastric irritation. Dulcine, the rival of saccharine, is probably not harmless. He does not forbid milk, but thinks it is a question to be decided for each individual. It is especially useful in albuminuric diabetes; fermented milk is useful. Sweet wines and liqueurs are harmful as indeed are all wines if taken in large quantities. In all cases the use of alcohol should be supervised with care.

Laudenheimer, R. *Diabetes und Geistesstorung.*—(*Berliner klinische Wochenschrift*, 1898, Nos. 21, 22, 23, 24).

Laudenheimer has studied the relations of diabetes to insanity in 1250 patients in the lunacy wards at Leipzic. Out of these he found 8 cases of true diabetes and 21 cases of transitory glycosuria, a total of 2·4 per cent. He found that chronic diabetes generally coincides with brain disease of the dementia type, while transitory glycosuria nearly always occurred in acute mental conditions associated with marked depression.

He thinks that the relation of glycosuria to mental disturbance may be thus classified :—

1. Accidental coincidence without causal relation.
2. Diabetes consequent upon mental disease.
3. Diabetes as the cause of insanity.
4. Diabetes and mental derangement both resulting from a common cerebral cause.

The first of these is of little importance. The second undoubtedly occurs, the glycosuria being apparently dependent upon great depression in the cerebral functions, or in consequence of a hæmorrhage in the brain. The third form is that which most interests us, and of this he gives several examples. In one of these the condition was very like general paralysis, but the patient recovered. In the others there were maniacal outbursts. He thinks these attacks are analogous to diabetic coma, and due to the same chemical causes. There was a marked relation between the age of the patients and the tendency to insanity which occurred almost exclusively in old persons.

Transitory glycosuria was almost always associated with melancholia, especially with the so-called "délire de ruine;" in the less common form, the patient is agitated, restless, sleepless, and querulous. In both these conditions anti-diabetic treatment by diet has been successful in improving the mental condition.

Hirschfeld, F. *Ueber Beziehungen zwischen Fettliebigkeit und Diabetes.*—(*Berlin. klin. Woch.*, 1898, No. 10)

Hirschfeld refers to the recent experiments of von Noorden and others on alimentary glycosuria, and relates the cases of three patients who had lately increased considerably in weight, and had small quantities of sugar in their urine which disappeared under treatment for reducing obesity. In considering the relation of diabetes to obesity, he says it is a later stage, and he argues that mild cases of diabetes should take more exercise and moderate quantities of food. He believes obese or well-nourished people who undergo little muscular exertion easily excrete sugar after increased ingestion of carbo-hydrates, and that on the contrary this is not the case after they have been for some time on restricted diet.

Moraczewski, W. v. *Stoffwechselversuch bei Diabetes mellitus.*—(*Centrbl. f. inn. Med*, 1897, No. 36).

The increased excretion of lime in diabetes has been long known, but it has not hitherto been determined whether there is an actual loss of lime from the body. The author has investigated two patients for seven days each, estimating the Cl, P, Ca and N, in their food and excreta (fæces and urine). In the first case under strict antidiabetic diet the N increased, the Cl sank, while of Ca and P were excreted double the quantity ingested, but of the last two the amount contained in the diet was very small. In the second case the patient took mixed diet for three days and animal diet for four. During the first period N and Cl were in equilibrium, while P was 32 and Ca 11 per cent. over the amount ingested. In the second period the quantities introduced of P and Ca fell to about one-tenth of what they had been, Cl remaining unchanged; the excretion of Cl and Ca sank, while P remained unchanged, but relatively to the amount introduced much more Ca and P were excreted than in the first period; so that it would appear that the diabetic organism cannot regulate the excretion of lime, and that the loss of lime on antidiabetic diet, which is poor in this mineral, is especially great. The author found no diminution of sugar follow the administration of lime (1 grm. daily) in the food. Perhaps this was due to the dose being too small, as in an earlier case he had observed a diminution following larger doses of lime.

Grube, K. *On the different forms of Albuminuria in Diabetes Mellitus* —(*Brit. Med. Journal*, 1898, Vol ii.).

Grube recognises the following causes of albuminuria in diabetes: (1) In severe diabetes precedent to coma and probably dependent upon hyaline degeneration of the renal epithelium (Armanni's lesion) or fatty degeneration (Fichtner) or necrosis (Ebstein); (2) from heart failure (Maguire); (3) from senile changes; (4) functional, but probably dependent upon hyperæmia and slight inflammation; (5) from chronic nephritis. When there is much albuminuria he gives milk freely if this is well tolerated, with mineral waters and warm baths, rest, even rest in bed may be needed, and everything should be avoided which can irritate the kidneys.

Polyakoff, W. *Ueber einen Fall von Pankreaskolic von temporärem Diabetes begleitet.*—(*Berlin. klin Woch.*, 1898, No. 11).

An innkeeper, aged 28, had suffered for two and a half months from attacks of pain in the epigastrium, ravenous hunger and thirst, wasting and weakness. The pain radiated to the left costal border, the spine, and the left shoulder blade. Stools normal. There was a tender spot in the centre of a line "between the gall bladder and the umbilicus." No tumour, liver not enlarged, heart and lungs normal. Urine acid, free from albumen, loaded with sugar, quantity about 105 oz. daily. The attacks of pain came on in paroxysms and were attended by vomiting. The diagnosis made was diabetes and pancreatic colic. On careful diet with antipyrin and caffein the patient recovered He had no more attacks, the sugar gradually disappeared and he regained strength. By the autumn of the same year he had increased 13 lbs. in weight and was able to do his ordinary work. The author argues that the facts warrant his diagnosis, and that the radiation of the pain to the left costal border and left shoulder blade differentiates it from biliary colic.

Kolisch, R., und Buber, O. *Beitrag zur Casuistik des Diabetes decipiens.*—(*Wien. klin. Wochenschr.*, 1898, No. 23.

A female patient aged 25, excreted urine containing 5 to 8 per cent. of sugar, in amount forty or fifty ounces daily, without polyuria, her general condition remaining good. An investigation of her metabolism extending over six days showed that she maintained nitrogenous equilibrium, which does not occur in severe diabetes. After ingesting carbo-hydrates sugar rapidly appeared in the urine which afterwards became free, and even on purely albuminous diet sugar was excreted when the urea excretion was at its maximum and then ceased. The reporters call this condition tachyglycuria. They seek an explanation of this form of diabetes in the kidneys, a view which is supported hy the fact that there was no increase of the sugar in the blood (0·14 per cent.) although the urine contained 5 per cent.

Krehl. *Alimentary Glycosuria after Beer Drinking.*—(*Centrlblt. für innere Med.*, 1897, No. 40).

Krehl has found that among Jena students sugar is present in the urine after drinking beer in certain cases, especially when the beer was taken in the morning. Out of fourteen who drank bock or export beer in the morning five had glycosuria. While after evening drinking only one out of nineteen, or with Bavarian beer one out of eleven. Not those who drank most had glycosuria.

Beylot. *Brewer's Yeast in Diabetes.*—(*Revue des Sciences Méd.*, July, 1897).

Beylot recommends the use of yeast in doses of from one to three teaspoonsful. It diminishes the glycosuria by destroying sugar in the intestine, but cannot act upon any formed in the body. Gastric juice and hydrochloric acid favour fermentation with yeast.

Vogel, H. W. *Linseed in Diabetes.*—(*Arzn. Rundschau*, Vol. vii., p. 182).

Vogel recommends the use of linseed tea in diabetes, made by boiling a tablespoonful of linseed in a pint and half of water until the quantity is reduced to a pint, this amount to be taken during the day in three divided portions. It must be combined with ordinary diabetic diet and hygiene.

Gilbert and Carnot. *Opotherapy in Diabetes.*—(*Semaine Méd.*, May 10th, 1897).

Gilbert and Carnot recommend the rectal injection of hepatic extract made as follows: 3½ to 5½ oz. of fresh pig's liver are minced and macerated for two hours in 7 to 9 oz. of water at 95° to 100° F., then filtered through muslin and expressed. This amount is usually well borne as an enema; if not it must be given in divided doses. It seemed most useful in obese patients with enlarged or cirrhotic livers.

Ludwig, V. *Ueber das Vorkommen von Drüsenepithelnekrosen im Darm bei Diabetes Mellitus.*—(*Cbl. f. inn. Med.*, 1897, No. 43).

Ludwig records necrosis of the intestinal glandular epithelium in a case of diabetic coma. The epithelium was in places whitish, at others absent with a hæmorrhagic necrotic base. Under the microscope in places the cylindrical epithelium had lost its nuclei, in others there were mycotic masses among the necrosed epithelium. The subacinal stroma was infiltrated with cells, but the necrosis was nowhere the consequence of purulent infiltration of the intestinal walls or circulatory changes (embolism, infarction), nor were micro-organisms apparently the cause, which must probably be attributed to toxic influences.

Maurel, E. *The Treatment of Diabetes.* (*Bull. Gén. de Thérapeutique*, 1897.)

Maurel, from a careful study of results of a milk diet in this disease, offers the following conclusions:—(*a*) From the practical stand-point: (1) The treatment of arthritic diabetes, both preventive and curative, is entirely a question of the amount of aliment. (2) The regulation of the amount is easier with a milk diet, and this should have the preference. (3) This diet also possesses the advantage, at the same time, of combating the majority of the diseases which so often accompany diabetes, especially those of the digestive and urinary organs. (4) His observations show the efficacy of this diet in the most severe complications of the disease, diabetic gangrene and threatening coma. (*b*) From the theoretical standpoint: (1) His observations confirm the view that arthritic diabetes is largely due to superalimentation. (2) They also give serious support to the view that diabetes is only a means of defence employed by the organism to diminish, by the elimination of the sugar, the substances destined for combustion, consequently the amount of products of incomplete combustion.

Brachmann, H. *Amylene Hydrate in Diabetes Insipidus.*—(*Therapeutische Monatshefte*, Heft xii., s. 641).

Brachmann has reported a case of diabetes insipidus in which an evening dose of fifty grains of amylene hydrate reduced the urine from 230 to 100 oz. and raised the specific gravity from 1005 to 1011 in six days. On the omission of the remedy the symptoms returned.

BRIGHT'S DISEASE.

Praetorius, A. *Auto-intoxication und Albuminuria.*—(*Berliner klinische Wochenschrift*, 1898, No. 14.

Praetorius thinks it impossible to deny that there are cases of functional albuminuria, that is to say, cases in which there is no organic disease of the kidneys. This is specially the case in so-called cyclical albuminuria, where the albuminuria is present in the morning and disappears as the day goes on. He quotes a case of this kind, associated with enlarged liver which proved to be due to hydatids, and disappeared after this had been cured by incision and drainage. But he contends that the main cause of functional albuminuria is auto-intoxication, either gastric or intestinal or hepatic, or as in the albuminuria of myxœdema, from the thyroid gland; or from some deranged tissue metamorphosis such as occurs in gout, diabetes, and obesity. He thinks the diagnosis of functional albuminuria should always be made with caution as such cases may later on acquire arteriosclerosis and become the subjects of true kidney disease.

Sollmann and McComb. *Preliminary observations on a case of Physiological Albuminuria.* (*Journal of Exper. Med.*, Vol. iii, No. 1, p. 187.

The subject was one of themselves, in perfect health, age 27, weight 154 lbs., height 5 ft. 8in. The proteids consisted of albumens and globulins, the average daily excretion being ·5317 grm. The quantity varied directly with the urea, inversely with the temperature of the air, not constantly with the amount of urine, slightly increased by diuretic drugs which act on the circulation. It was lessened by sleep, and subject to sudden spontaneous increases for which there was no explanation. The influence of posture and exercise was not determined.

Arnaud, F. *Albuminurie et lésions des reins dans la variole. Revue de Méd.*, 1898, p. 392.)

Albuminuria was present in 95 per cent. of cases of small-pox, more abundantly in the severe cases and during the early febrile stage. It persisted in 75 per cent. after recovery, but in minimal quantity. It depends upon a slight nephritis, which may become aggravated and lead to uræmic symptoms, chronic organic disease, &c. Even in the absence of all clinical evidence of nephritis the kidneys of patients dying during the acute stage of variola showed invariably lesions of the vessels and connective tissue (diapedesis) with epithelial changes in the convoluted tubes. In patients dying after convalescence these changes were found to have been succeeded by sclerosis of the connective tissue, atrophy of tubules, and degeneration of the epithelium.

Eyre, J. W. H. *Albuminuric Retinitis*. *Ophthalmic Review*, 1897, p. 275.

Eyre refers to the generally received opinion that albuminuric retinitis is met with only in chronic forms of Bright's disease, and adduces in opposition three cases. The first was a man of 50, seen first with failing vision, slight headache, general malaise of three days' duration, attributed to getting wet a week before. There was some puffiness under eyes, urine free from albumen, blood, and casts. Ten days later granular casts were found, and after three other days albuminuria occurred. The eyes from the first showed swelling, blurring, and vascular engorgment of the discs, with numerous white spots around macula and flame-shaped hæmorrhages between macula and disc. He died six weeks later. The kidneys were swollen, weighed 6·5 and 6 oz.; capsules non-adherent, cortices swollen, lighter in colour than pyramids, which were deep red and dripping with blood. A urine chart follows, in which the amount of albumen is given as high as 10 per cent. (!) with epithelial, blood, granular, and hyaline casts in the later stages of the case. No microscopical description of the kidney is given, and it remains probable that the case was one of latent chronic disease upon which a sharp acute attack supervened, masking by the intensity of the engorgement the evidences of old mischief. The report omits to say whether the heart was hypertrophied or the vascular system free from indications of chronic disease. The other two cases are even less important, as neither died, and the only noteworthy fact was the absence of albuminuria at the time the cases came under observation for the retinal condition. In no case does it seem to have occurred to the author to estimate the functional efficiency of the kidneys by determining the total amount of urea when the case came first under observation.

Burd et Bonnet. *Recherches et considérations cliniques sur les différences de perméabilité rénale dans les diverses espèces de néphrites.*—(*Archives Gén. de Méd.*, 1898, pp. 129, 283, 464).

The authors arrive at the following conclusions:—

1. Renal permeability is notably diminished in all stages of interstitial nephritis.

2. In epithelial nephritis it is at least normal and often increased.

3. In interstitial nephritis secondary to epithelial nephritis permeability is normal or increased for methylene blue, diminished for potassium iodide, the difference being due to the conditions under which these substances are eliminated.

4. In other renal lesions permeability appears little modified.

5. Blood-poisoning by defective elimination can only occur in interstitial nephritis; in epithelial nephritis it is due to excessive loss.

6. Investigation of renal permeability by the subcutaneous injection of methylene blue or potassium iodide may give useful clinical indications if account is taken of the different kinds of renal lesions.

7. Methylene blue only gives precise results when it is eliminated naturally; when the leuco-derivatives are in excess it is useless, as in the ammoniacal urines of prostatic and urethral diseases.

Bellendall. *Hereditary Granular Kidney in early Childhood.*—(*Archiv für Kinderheilkunde*, xxii., p. 61).

Bellendall reports two cases of granular kidney in children whose mother suffered from chronic nephritis. The elder lived two years, the younger only six months. The degree of contraction, which was very intense, led the author to believe that the disease commenced in utero. There was no history of syphilis, scarlatina, or other ætiological factors. Bacteria could not be demonstrated. The mother's illness apparently began during the pregnancy with the elder child.

Lemoine and Gallois. *Ether in the Treatment of Uræmia.*—(*Nord Méd*, Sept., 1897).

Lemoine and Gallois recommend two or three teaspoonsful of ether in a little swetened water every half-hour or every hour, with a subcutaneous injection of two to three cubic centimetres every three hours. They consider the treatment on a par with blood-letting. It increases the urine, strengthens the pulse, and calms the respiratory spasm.

Ewart, W. *The Treatment of Chronic Nephritis.*—(*Brit. Med. Journal*, July 2nd, 1898).

Ewart recommends in the treatment of general anasarca that the bed should slope towards the foot, so as to favour the gravitation of the fluid which should be drawn off by Southey's tubes or incisions made with antiseptic precautions. He prescribes a liberal diet with moderate use of Burgundy, St Raphael, or Claret. Digitalis and iron may be employed subsequently. Uræmia might be treated by causing artificial dropsy of a limb by the use of a tourniquet and then drawing off the serum from the cellular tissue.

MISCELLANEOUS.

Roques, L. *Urticaria in Paroxysmal Hæmoglobinuria.*—(*Lancet*, 1898, Vol. i., p. 1704).

Roques has related to the Société Médicale des Hôpitaux a case of paroxysmal hæmoglobinuria where an attack could be always produced by exposure to cold and when intense the skin became tinged yellow. If a portion of skin only were exposed to cold, by applying ice or ether spray a pruriginous urticarial wheal formed surrounded by a rosy band. The wheal disappeared in ten or fifteen minutes, but was succeeded by a yellow patch of œdema, which persisted for two hours and left a yellow stain.

Fenwick and others. *The Treatment of Incontinence of Urine*—(*Brit. Med. Journ.*, 1898, Vol. i., pp. 739, 803, and 867).

In answer to a correspondent the following prescription is suggested :—℞. Tinct. lycopodii clav. ʒijss; tinct. cardam. co. ʒijss; syr. simp. ℥ss; aq ad. ℥ij. Ft. mist. Sig. ℥ss. quartis horis sum. Mr. Hurry Fenwick is quoted as saying that no drug is more satisfactory than lycopodium. As the spores are practically insoluble they should be subjected to prolonged trituration with sugar of milk, after which they are readily dissolved in spirit. Among other remedies are suggested tying a towel round the waist with a large knot over the spine to prevent sleeping on the back; an alarm clock to wake the patient at 1 a.m., when the bladder should be emptied; cold morning baths and a mixture of iron, strychnine and dilute phosphoric acid.

Dr. Proctor Sims recommends: ℞. Extr. belladonna gr$\frac{1}{10}$; aq. camph. ℥ss. M. ft. mist. Sig. ter in die. He does not think the tincture so effective, and insists upon the dose.

Dr. Hawkins-Ambler says it is often sufficient to discuss in the little patients' hearing the advisability of blistering the nape of the neck if the medicine does not effect a cure.

Casper, L. *Urotropine in Renal and Bladder Diseases.*—(*Therap. Monatshefte*, 1897, No, 52, p. 1238).

Casper recommends urotropine in daily doses of fifteen to thirty grains or one drachm in renal colic, cystitis, pyelitis, phosphaturia, etc.. In its decomposition formaldehyde is set free.

Harris, M. L. *Renal Hæmaturia without known lesions.*—(*Philadelphia Medical Record*, March 19th, 1898).

A few years ago Senator published a case of hæmorrhage from the kidney so persistent and profuse that the organ was ultimately excised to save the patient's life. Subsequent examination revealed no structural alteration in the kidney, but the patient recovered and had had no relapse. In a subsequent debate at the Berlin Medical Society several cases of "simple" renal hæmorrhage were related, mostly induced by unusual exertion. Harris's cases were both males, aged 50 and 51, the bleeding having lasted in one three months, in the other three years. The urine was dark brown. In one case the blood could be seen to flow from the left ureter. The kidney was explored and the cavity of the pelvis opened; nothing was found, but a week later the bleeding ceased, and after six months there had been no recurrence. The other recovered under rest, tonics, and forced feeding.

Frank, J. *Ein Fall von Hämaturie und eine merkwurdige Ursache derselben.*—(*Wien. klin. Rundschau*, 1897, No. 48).

A woman aged 42, mother of three children, had suffered for six months from severe hæmaturia, which had resisted internal medication and washing out the bladder. The urine was bright red and contained much blood. The uterus and appendages and renal regions showed nothing abnormal. Vesical catarrh was not present. The cystoscope showed the vesical mucous membrane covered with numerous uric acid crystals, whose sharp angles penetrated the bladder lining. The mucosa was red and moderately hyperæmic. Simple washing did not remove the crystals, but they were cleared out by pumping out the bladder with a Bigelow's aspirator. Two days after the operation the patient was quite well.

Jahnel, W. *Zur Casuistik der Harnstoffauscheidung durch die äussere Haut.*—(*Wien. Med. Presse*, 1897, No. 46).

Urea crystals appearing as an efflorescence upon the skin are described in most text-books of physiology, but the occurrence is sufficiently rare to make a newly reported case a welcome aid to our faith. Jahnel states that during the last eight days of the life of a case of chronic Bright's disease the skin of the forehead nose and chest was covered as if with flour or with a whitish crystalline powder, which near the margin of the hairy scalp formed white crusts. This substance under the microscope was composed of clumps of epidermic cells and crystals which gave all the chemical reactions of urea.

Smith, W. G. *Cystinuria.*—(*Dublin Med. Journal*, May, 1898).

This paper tells us nothing which throws any fresh light upon the pathology or treatment of this condition. Cystin is a product of proteid metabolism formed in the intestine probably under the influence of some special intestinal micro-organisms, and the indication is to disinfect the intestines [by the regular use of saline aperients with such disinfectants as salol, thymol, beta-naphthol, etc.—Rep.]

Bradshaw, T. R. *Spontaneous Precipitation of Albumose.*—(*Lancet*, 1898, vol. i., p. 1188).

Bradshaw has reported a case of a man with obscure disease of the vertebral column whose urine was often milky and deposited an amorphous proteid sediment. At other times the urine was clear but contained albumose in solution which appeared to be identical with the proteid precipitated from the milky specimens. It coagulated at from 50° to 60° C., and was partially dissolved again on boiling. Acidulation reduced the coagulation point. It was precipitated by nitric acid and this precipitate dissolved on heating and re-formed on cooling. It was precipitated also by hydrochloric and sulphuric acids. Dr. Sidney Martin said the substance was hetero-albumen, but differed from true peptic hetero-albumen in not being dialysable.

Pelligrini. *A simple method of estimating the toxicity of Urine.* —(*Rev. Sper. di Freniatria, 1897*, p. 114).

Pelligrini has made a number of experiments which go to show that the amount of potassium indoxyl sulphate in the urine is a reliable index of the degree of its toxicity. He recommends the employment of Primavera's test for this substance, which is as follows: Pour from 4 to 5 c.cm of urine into a test tube, and add slowly one-third the volume of pure concentrated sulphuric acid. Cool the mixture by dipping the end of the test tube into cold water. Add 1·5 c.cm. of pure chloroform. Mix thoroughly, and then allow the chloroform to settle to the bottom of the tube. If potassium indoxyl sulphate is present in normal quantity, the chloroform has a light-blue tint. When it is present in excessive amount the chloroform has a deeper blue colour proportionate to the excess. Information regarding the degree of toxicity of the urine is of special value in cases of insanity, in the causation of many of which auto-intoxication is now known to be a very important factor. Pelligrini believes that the increased toxicity of the urine in such cases is chiefly due to abnormal fermentation within the gastro-intestinal tract; it is important, therefore, to correct any disorder of digestion in these patients.

Arnold V. *Ueber die Heller'sche Probe zum Nachweis des Blutfarbstoffes im Harn.—(Berliner klinische Wochenschrift, 1898*, No. 13).

Arnold thinks Heller's test is one of the best for showing the presence of blood in the urine; it indicates not hæmatin but hæmochromogen, and the test is made much more certain by spectroscopic examination.

Tunnicliffe and Rosenheim. *A new Volumetric Method of Estimating Uric Acid in the Urine.—Brit. Med. Journ.*, Feb 5th, 1898).

The method resolves itself into three distinct procedures:

1. The preparation of the standard piperidine solution.

2. The obtaining of the uric acid in a pure state from the urine.

3. The titration of the same with the standard solution.

1. They found a $\frac{1}{20}$ normal piperidine solution most suitable. This may be standardised by estimating the amount of it which is required to neutralise a certain amount of a $\frac{1}{20}$ normal acid solution. Those unpractised in the preparation of standard solutions are advised to purchase the solution from a firm of manufacturing chemists.

2. The uric acid may be obtained from the urine best by precipitating the urine with ammonium chloride and subsequently

decomposing with hydrochloric acid. The uric acid obtained from 100 c.cm. of urine by this method is carefully filtered and freed from hydrochloric acid by washing with water until the washing shows no reaction with Congo paper. For this purpose 15 to 20 c.cm of water suffice, if an unreasonable excess of hydrochloric acid has not been taken.

3. The pure acid is rinsed with 20 to 30 c.cm. of hot water off the filter paper into a small vessel. Although the urate of piperidine is soluble at 15° C. to the extent of 5·3 per cent., it is advisable in order to obtain a sharp end reaction to bring the fluid which is to be titrated up to the boiling point. A few drops of an alcoholic phenolphtalein solution are then added, and the piperidine solution allowed to run in from a burette, the liquid being the while kept hot. The complete saturation of the uric acid present is shown by the appearance of a red colour which remains on shaking, and also by the fact that no uric acid remains undissolved.

Since 1 c.cm. of a $\frac{1}{20}$ normal piperidine solution corresponds to 0·00425 g. piperidine, and this is equal to 0·0084 g. of uric acid, the number of c.cm. required to produce the end reaction described above multiplied by 0·084 will give the amount of uric acid present. In those cases in which 100 c.cm. of urine was the amount originally taken, it is obvious that the number thus obtained will give the percentage of uric acid in the urine.

Cook, R. Harvey. *A new rapid and accurate method of estimating Uric Acid.*—(*New York Med. Record*, March 12th, 1898.

Cook's method is chemically the same as Haycraft's, in that the uric acid is thrown down as urate of silver. The following apparatus is necessary: a centrifugal machine, four graduated tubes of a capacity of fifteen cubic centimetres each, and a pipette holding one cubic centimetre.

Place in the graduated tubes 10 cc. of urine; add to this from 0·5 to 1 gram of sodium carbonate and from 1 to 2 cc. of ammonium hydrate. Shake until the sodium carbonate is dissolved; this precipitates the earthy phosphates. Separate this precipitate with the centrifugal machine and decant the supernatant urine into another graduated tube. It will be found that the earthy phosphates are readily separated and adhere to the bottom of the tube; this allows the clear urine to be readily poured off into another tube. To the clear urine now free from phosphates add 2 cc. of ammonium hydrate and 2 cc. of ammonic silver solution (made by dissolving 5 gm. of silver nitrate in 100 cc. of water and adding ammonia until the solution becomes clear). The addition of the silver solution causes the uric acid to be precipitated as the urate of silver. Separate this precipitate with the centrifugal machine and pour off the supernatant urine. Add to the precipitate an excess of ammonium hydrate, at least 5 cc., and mix thoroughly. By this any of the chlorides that may have been precipitated are redissolved, leaving only a pure urate of silver. Lastly, precipitate this urate of silver until the lowest reading is to be had.

Each 1 cc. as marked on the graduated tube indicates 0·001176 gm. of uric acid in 10 cc. of urine. For example: if 0·5 cc be the lowest reading, you then have 5 × 0·001176 = 0·00588 gm. of uric acid in 10 cc. of urine. In order to obtain the percentage, multiply this result by 10. If the number of cubic centimetres of urine passed in twenty-four hours is known, the total uric acid can be easily calculated. It will be found advantageous to carry two specimens through the examination at the same time; thereby the centrifugal machine is equally balanced.

REPORTS OF SOCIETIES.

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BRITISH MEDICAL ASSOCIATION.
BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

Thursday, Oct 13th, 1898, VINCENT JACKSON, F.R.C.S. Ed., President, in the chair.

Cyst of Parovarium.—Mr. Lawson Tait showed a cyst of the parovarium which he had removed from a patient in Shropshire two days before. The specimen was in itself common enough to deserve but little notice, as it was the ordinary cyst, which could be easily enucleated from its nest between the folds of the broad ligament; in fact, it would always be possible to remove such cysts without opening the peritoneum at all. The present specimen illustrates, however, the occasional exception to Mr. Tait's teaching on the subject, that in the removal of such tumours the ovary and tube should be left. He had recently said that such a sound principle of truly conservative surgery had not a constant success, and the present was an instance. The exclusion of the ovary from the ligature at the time of the operation was perfectly easy, but the tube was found to have been stretched over the tumour to such an extent as to increase its length to nearly nine inches and its lumen so that it admits a number 12 catheter. To have preserved the tube under these circumstances would have materially complicated the operation, and to have left a long raw edge with a proclivity towards forming adhesions of a most dangerous kind, dangerous, for instance, to an extreme degree had it coiled round or even partially round a piece of small intestine. The subsequent contraction would have involved inevitably strangulation of the gut. Even had flaps of peritoneum being cut off with it and united round the tube, the return of a nine inch cord of this kind amongst the intestines could not be regarded as a wise proceeding. The ovary has been preserved without the tube, a useless gland without its duct, and the principle of conservative surgery as here applied to the uterine appendages has been defeated. The alternative would have been radically bad surgery, one of the points which will be discussed in a paper to be submitted to the Branch later on in the session.

Carcinoma of Splenic Flexure of the Colon.—Mr. Jordan Lloyd showed a specimen of carcinoma involving the splenic flexure and part of the transverse and descending colons successfully removed by operation from a man 45 years of age, the corresponding portion of the great omentum being taken away with the growth. End to end anastomosis by suture was secured without the aid of buttons of any kind The patient made a satisfactory recovery. Symptoms of diarrhœa, paroxysmal crampy pains, flesh loss and increasing anæmia had been present for more than a year. Since the operation the bowels had acted normally and the general health had improved.

Intussusception occurring twice in the same patient.—Mr. Haslam showed a child aged 6 years on whom he had operated on two different occasions for intussusception. She was admitted in March, 1897, with symptoms of this condition, and on opening the abdomen twenty hours after their onset a well-marked intussusception if the ileo-cæcal variety was found and reduced. In July of this year she was again attacked with abdominal pain, tenderness, and vomiting, and though the symptoms were not so urgent or so clearly indicative of the condition as on the previous occasion, the presence of an elongated swelling detected by deep pressure on the right side of the abdomen made the diagnosis clear. On opening the abdomen through the old cicatrix an intussusception of the enteric variety about five inches in length was found and reduced without much difficulty. In the interval between the operations the patient had had several attacks of abdominal pain, sometimes associated with vomiting, probably due to irregular peristaltic action of the bowels.

Dr. Carter read a paper on the Investigation and Management of Chronic Disease.

Dr. Short read a paper on the Treatment of Arthritis by means of Hot-air Baths.

REVIEWS.

OPERATIVE GYNÆCOLOGY.*

A BOOK on the subject of Operative Gynæcology, written by so eminent an authority as the well-known Professor of Gynæcology and Obstetrics in the Johns Hopkins University would, under any circumstances, demand careful and attentive consideration. The examination of such a book is doubly a pleasure when the work is presented in such an attractive form as the two clearly printed and beautifully illustrated volumes before us. In a handsome setting the distinguished author has given us a faithful representation of all that is best in the science and art of his subject, clearly and practically expounded, and strongly marked with his own individuality. The duty of the critic is therefore a peculiarly pleasant one, to strongly recommend the work to the favourable consideration of every practising Gynæcologist who understands the English language. The only previous work of similar excellence and authority in the language is that of the late lamented Greig Smith, and the only Continental books which deserve places beside these two are that by Hegar and Kaltenbach in the German, and that by Pozzi in the French language.

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* Operative Gynæcology. By Howard A. Kelly. Two vols. London: Henry Kimpton. 1898.

The first volume opens with chapters on Asepsis and Antisepsis, in which the methods that have been found serviceable by the author are detailed with great care and clearness. The reader cannot fail to be struck with the practical nature of the recommendations, with the thoroughness of the methods employed, and with the absence of unnecessary and trivial ritual. A short account follows of the Bacteriology of the vagina, and of the pus-organisms, and this is succeeded by a description of the topographical anatomy of the abdomen and pelvis. The anatomy of the abdominal wall, of the viscera, and of the muscles of the pelvic floor, is well and clearly described, and illustrated by a large series of useful and informing pictures, most of them original and prepared under the direction of the author. By a strange oversight very scant attention has been given to the arrangement of the pelvic fascia and connective tissue.

The gynæcological examination, case-taking, instruments and dressings, and anæsthetics, are next treated in the order named, and then follows a description of the diseases and injuries of the external genitals. This part of the work is introduced by a short and useful chapter on the general principles involved in the plastic operations about the vulva and vagina. The description of relaxed vaginal outlet and ruptured perineum is excellent, and stress is laid on the necessity for immediate repair of injuries after parturition. For the late relief of the conditions just named the author holds that denudation operations are necessary, and the methods that have been found most useful by him are described and illustrated in his usual clear and explicit manner.

The most important, original, and suggestive portion of the first volume is that dealing with the surgery of the bladder and ureters. Professor Kelly has made this subject peculiarly his own, and has been instrumental in greatly extending and improving the means of examination and treatment. His method especially consists in inspection through a cylindrical speculum of the interior of the voided bladder after distension with atmospheric air induced by placing the patient in the knee-elbow position, or on the back with the buttocks well raised. It is claimed that this method has been so far perfected that it is no longer necessary to dilate the adult urethra to admit the finger for the purpose of diagnosis. Other methods of examination of the bladder and ureters receive due attention, but the author insists that the cystoscope should be used in every case where the vesical affection is more than transient, and the diagnosis is not absolutely clear without it; and that every part of the bladder is then to be thoroughly explored.

The account of the surgical affections of the ureters is very full and merits special consideration. The methods of examination by inspection of the orifices, palpation, catheterisation and sounding, are all fully described, and then the various affections are considered separately. Congenital affections, inflammations, obstruction, stricture, and calculus, are all dealt with, and the chapter ends with a full account of ureteral fistulæ, a condition that has been rapidly coming into prominence of late years, by reason of the greatly increased number of operations on the uterus. The various operations for the relief of this distressing condition are discussed, and the necessity is emphasised of selecting the most simple means. The vaginal route should be chosen if possible; if it be not possible the fistula should be attacked through an abdominal incision; the last thing to be thought of is colpocleisis or nephrectomy. Several interesting cases of the condition are related in full detail.

In the treatment of prolapse of the uterus, resection of the relaxed vaginal outlet associated with supravaginal amputation of the cervix is recommended, with in addition in bad cases abdominal fixation of the uterus. In cancer of the uterus an extensive operation through an abdominal incision is preferred, the pelvic connective tissue being removed as widely as possible along with the womb. The ureters are protected from injury by catheters passed into them just before beginning the operation, so as to make them stand out firm and prominent in the surrounding tissues. The treatment of Chronic Inversion of the uterus is the least satisfactory in the whole book. The methods given are three in number; the first is manual reposition, the difficulties of which according to the author's admission are usually insuperable; the next is vaginal amputation of the organ; the third is Küstner's method. No mention is made of reduction by means of Aveling's or similar repositors, a method much in favour on this side of the Atlantic, and one that deserves trial before any of the means just noted are put into practice.

The second volume deals with abdominal operations, and begins with descriptions of the general principles and complications common to all operations by this route, of the care of the patient and of the wound up to the time of recovery, and of the complications that may arise during convalescence. The method of closure of the abdominal incision recommended may be noted. It consists in a continuous fine catgut suture to the peritoneum, mattress wire sutures to the fascia, continuous catgut suture to bring the subcutaneous fat into apposition, and finally a continuous subcuticular fine catgut suture to close the skin wound. By this method of suture Dr. Kelly claims that ventral hernia can almost entirely be prevented.

In an interesting and important chapter on conservative operations on the tubes and ovaries, the author expresses himself strongly on the necessity of not removing healthy ovaries for dysmenorrhœa or other nervous affections, and of not removing ovaries that merely exhibit unruptured Graafian follicles, on the assumption that such organs are diseased. The importance of preserving as much as possible of the pelvic organs during any operation that may be necessary is also strongly emphasised.

The various operations for simple and purulent inflammations of the tubes and ovaries and their neighbourhood, simple ablation, vaginal drainage and enucleation, and the abdominal radical operation, are in turn described and the indications for each carefully and judicially considered. The rest of the volume is mainly taken up with a description of ovarian cysts and tumours, of fibroids of the uterus, and of extra-uterine fœtation, and of the numerous surgical proceedings which are necessary to deal with these conditions. A useful account of the more remote results of abdominal operations, and a chapter dealing with the proper method of conducting post-mortem examinations in Gynæcological cases, bring the work to a close.

Throughout the text numerous apposite cases are introduced, and form by no means the least important and valuable part of the work. The completeness of the records of these cases bears testimony to the excellence and thoroughness of the work carried on in the department of Gynæcology in the Johns Hopkins University. To the publishers great credit must be given for the beautiful form in which the work has been sent out, and special and particular praise is due to the illustrations. No previous medical textbook has been adorned with pictures so clear, faithful, and true to nature, of such artistic merit, and so useful withal. Professor Kelly's reputation, high as it was before, cannot fail to be greatly enhanced by the publication of this work, which marks a distinct advance in the practice of the special department of Surgery to which it is devoted.

THE COLD-BATH TREATMENT OF TYPHOID FEVER.*

THERE has been no lack of late years of demonstrations written in the English language of the value of the Cold-Bath Treatment of Typhoid Fever, although it must be admitted that, with few exceptions, of whom Dr. Cayley takes the first place, English physicians have been remarkably silent on the matter. But these demonstrations have all, as far as we know, been contained in isolated papers, and no English book has until now been devoted to the subject. Dr. Hare has done well to fill up this blank, and, although he might with advantage have brought forward more prominently the very large mass of figures which have now been collected, his book contains a telling statement of the case, and affords valuable additional proof of the efficacy of this method of treatment.

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* The Cold-Bath Treatment of Typhoid Fever: the Experience of a Consecutive Series of Nineteen Hundred and Two Cases Treated at the Brisbane Hospital. By F. E. Hare, M.D., Late Resident Medical Officer, Brisbane (General) Hospital. London: Macmillan and Co. Limited. 1898.

The first part of the book is taken up with a very clear and minute account of the practical details of the treatment as carried out at the Brisbane Hospital. Inasmuch as two similar accounts have been published in this Review during the last four years, we need not allude further to these points than to remark that, owing to the difficulties imposed by a restricted nursing staff, the massage and friction to which many writers attach so much importance were dispensed with in all but the most serious cases, apparently without materially affecting the ultimate results. Dr. Hare then considers the effect produced upon the various symptoms of the disease, and these again we may pass over as having been recently discussed in these pages. His account is based upon a series of 1902 consecutive cases, treated during a period of ten years, 1173 of which came under his personal observation.

The chapter on the "Influence of the Treatment on Mortality and Prognosis" is one of especial interest, inasmuch as Dr. Hare minutely analyses the cases and compares them in many particulars with an earlier series of cases treated expectantly at the same hospital, amounting to 1828 in number, and covering a period of four and a half years. Taking the whole of these two sets of cases, the respective percentage mortality was 14·8 and 7·5, showing a diminution of nearly 50 per cent. to be placed to the credit of the cold-bath method. This diminution is not materially lowered by the exclusion of certain cases in each series for the purpose of making them more strictly comparable with one another.

We have no wish to call in question the value of the treatment, for we regard it as impossible to withstand the conclusion uniformly pointed to by the enormous number of cases which have now been accumulated, cases amounting to many tens of thousands in number, and all showing a remarkable diminution in the mortality of the disease. But we cannot avoid pointing out one very curious omission in Dr. Hare's otherwise most careful analysis and comparison. In considering the possible sources of fallacy in such calculations, Dr. Hare alludes to four only, namely, paucity of data, variations in the extension of the term typhoid, variations in the severity of the disease and in the age and sex-constitution of the series compared, and errors in diagnosis; but he omits what in our opinion is the most crucial point of all, namely, differences in the period of the disease at which the cases first came under treatment. It is true that he gives particulars on this point with regard to the cases treated by cold bathing, but we can find no similar analysis of the other series, and we submit that this omission deprives the comparison of much of its value. In an article by the present writer published in the *Birmingham Medical Review* for December, 1894, a series of 304 cases of typhoid fever treated on the expectant plan at the Birmingham General Hospital was reported, with a total mortality of 16·8 per cent. These were compared with a series comprising 196 cases treated by Professor Osler on the cold-bath system, and analysed by him in the Johns Hopkins Hospital report for the year 1893. The total mortality was found to be 7·1 per cent. In the article referred to it was pointed out that, whereas 38·6 per cent. of the Birmingham cases were admitted after the end of the second week of the disease, only 17 per cent. of the cases reported by Professor Osler were admitted after that period, and attention was drawn by means of statistical tables to the disastrous effect on the Birmingham figures which was to be attributed to this difference. Of the 953 cases of which Dr. Hare gives the date of admission, we find that no less than 57·9 per cent. were admitted on or before the eighth day, as compared with only 23·7 per cent. of the Birmingham cases admitted—not, it is true, *on* or before the eighth day, but in the course of the first week. Even after fully allowing for the errors often made in estimating the date of onset in so insidious a disease as typhoid fever, the fallacy which would be involved in comparing the mortality of these two sets of cases is obvious, and, although it is quite possible that the earlier series treated at Brisbane might prove to be strictly comparable in this particular, yet, unless this be definitely shown, we cannot think that the comparison as regards total mortality is at all conclusive.

Apart from this serious omission, Dr. Hare's demonstration is an excellent one, and he has done real service in once more calling attention to this very important subject. We hope that his book will do something to stimulate the profession in England to investigate this very promising, if not already definitely established, method of treatment.

THE FERMENT TREATMENT OF CANCER AND TUBERCULOSIS.*

WHATEVER be the real value of yeast considered as a remedy for cancer and tuberculosis, this book, written with the object of bringing its virtues before the notice of English physicians, is worth reading, for it contains a record of much interesting experimental work. We cannot pretend to think that the clinical demonstrations contained in it are very convincing, but the author expresses his intention of publishing much fuller accounts of his experience in the treatment of the several diseases in later volumes, and judgment may fairly be reserved until these books have made their appearance.

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* The Ferment Treatment of Cancer and Tuberculosis. By Horace Manders, F.R.C.S., M.D. London: The Rebman Publishing Company Limited. 1898.

The fact that various species of Saccharomyces possess the power of ingesting any microbes with which they come into contact was accidentally discovered in 1892 by M. Bruhat, an analytical chemist of Paris, and this discovery was promptly seized upon by Dr. de Backer as suggesting the possibility of artificially reinforcing the phagocytes of the blood. A careful series of observations resulted in the manufacture of a fluid containing "pure yeast cells mingled with a certain definite proportion of fermentable and mineral matter necessary to fermentation and to the life of the cells," to which the name "backérine" was subsequently given, and the effect of this fluid upon bacteria and animal tissues was then thoroughly investigated. Successive experiments showed that, when backérine was mixed with organic fluids containing pathogenic bacteria, alcoholic fermentation was by no means impeded, that many of the organisms were ingested before the commencement of the process of fermentation at a time when they were in full activity, and that not only were the incorporated bacteria more or less completely digested by the yeast cells, but even those which remained free were eventually rendered motionless and inert. Many varieties of bacteria were used for these experiments, among them those of tuberculosis and diphtheria. Subsequent experiments with animals proved three things, namely, that injections of backérine caused as a rule but little constitutional disturbance, that alcohol was discoverable in the breath of the animals experimented on, and that a rapid diffusion of the yeast cells took place in the blood and tissues, although they were always to be found in greater number in the neighbourhood of the point of inoculation. The inoculation of healthy human subjects was finally undertaken without producing more than a temporary and moderate constitutional upset.

As we have said, the book closes with the quotation of certain cases of disease in which the treatment has been tried. These are, however, hardly conclusive. A numerous and carefully controlled series of cases will be demanded by critics before any opinion, favourable or the reverse, can be formed of the merit of the treatment. For our own part, we do not at present attempt to arrive at any conclusion on the point.

KING'S COLLEGE HOSPITAL REPORTS.*

In this, the fourth volume of the King's College Hospital Reports, Dr. Curnow resumes his interesting history of the Building and its Staff, bringing his record up to the year 1864.

Of the papers contained in the volume there are three which deserve special mention. The first of these is Dr. Tirard's on "Albuminuria in Children." This is an important contribution, and we note especially that he holds the view that albuminuria may be caused by congestion of the kidneys caused by strain from coughing; and also that the albuminuria of diphtheria never gives rise to chronic nephritis.

Mr. Carless's "Notes on Appendicitis" are written with a clear surgical knowledge of the subject. He considers that mechanical conditions, such as strains, twists, etc., play a greater part in the ætiology of the disease than is usually supposed. He also lays great stress upon the importance of a rectal examination in doubtful cases; and advocates early operative procedure, *i.e.*, within forty-eight hours if no improvement occurs with non-operative treatment.

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* King's College Hospital Reports. Vol. iv. October 1, 1896, to September 30, 1897. London: Adlard and Son. 1898.

The paper by Dr. Whitfield on "Some Points in the Diagnosis and Management of Syphilis," struck us as being particularly good, inasmuch as he succeeds in steering clear of stereotyped remarks on the subject and brings out many points in both diagnosis and treatment, which, as he admits, receive more careful attention on the continent than with us.

Amongst the cases, the one of Subphrenic Abscess under Mr. Cheyne, with secondary abscesses in the liver and brain, is of great interest and his remarks thereon most instructive.

We do not like the plan on which many of the cases are taken, and think that a summary of the case with dates inserted is much to be preferred to the "diary" method so frequently adopted.

EPIDEMIC CEREBRO-SPINAL MENINGITIS.*

THIS is the second important report on Epidemic Cerebro-Spinal Meningitis for which medical science is indebted to the State Board of Health of Massachusetts. In 1873 this state was the scene of a severe epidemic of the disease, and a careful inquiry into its causes and natural history, together with a summary of 517 cases, was published by Dr. J. B. Upham in the report of the Board for that year. During the last twenty-five years, however, much additional knowledge has been gained, especially through the discovery by Weichselbaum in 1887 of the specific micro-organism of the disease, and the confirmation of the discovery eight years later in 1895. The present report, by Drs. Councilman, Mallory, and Wright, deals essentially with a second severe epidemic which occurred in Boston in 1896-7, although a summary of previous work and a very complete bibliography are included. 111 cases are analysed, being the number treated in the various hospitals, but the extent of the epidemic is not adequately represented by these figures. The authors, however, are probably justified in their unwillingness to accept too readily the diagnosis of cases reported from private sources.

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* Epidemic Cerebro-Spinal Meningitis, and its Relation to Other Forms of Meningitis. A Report of the State Board of Health of Massachusetts By Dr. W. T. Councilman, Shattuck Professor of Pathological Anatomy: Dr. F. B Mallory, Assistant Professor of Pathological Anatomy; and Dr. J. H. Wright, Instructor in Pathological Anatomy, Harvard University. Boston: Wright and Potter Printing Co. 1898.

The report deals with all aspects of the matter—causation and incidence, symptomatology, pathology, bacteriology, diagnosis, and treatment. That part of it which deals with the diagnosis by aid of lumbar puncture has been recently amplified in Dr. A. H. Wentworth's paper published in the *Lancet* of October 1st., a paper which in other respects is mainly an abstract of the Boston report.

TEXT-BOOK OF ZOOLOGY.*

THIS book is based upon Mr. Wells' Text-Book of Biology, as far, at any rate, as its general plan is concerned. In effect, however, it is practically a new book, only one chapter—so the authors inform us—having escaped alteration. We are not acquainted with the above mentioned work, but can recommend the present edition to students of biology. The anatomical descriptions are clear and adequate, and the types included are sufficiently varied to cover the ground of most preliminary medical examinations. The tables of questions—largely selected from previous university examination papers—which are appended to each chapter, will considerably increase the value of the book.

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* Text-Book of Zoology (The University Tutorial Series). By H. G. Wells, B.Sc. Lond., F.Z.S., F.C.P., and A. M. Davies, B.Sc. London. London : W. B. Clive.

PUBLISHERS' DEPARTMENT.

New Inventions, Drugs, etc.

We have received samples from the Anglo-Swiss Condensed Milk Co. of their recent preparation, the so-called "Ideal Milk." This is a concentrated non-sweetened milk, to which cream is added so as to increase by 20 per cent. the butter fat in the pure milk employed. It is moreover sterilised, and is therefore well suited for use in those cases of gastro-intestinal disturbances in which the temporary use of condensed milk is deemed advisable. Notice is drawn to the fact that the omission of all sugar renders the milk liable to undergo change when once the tin has been opened more quickly than is the case in the sweetened preparations.

New Books, etc., Received.

A Text-Book upon the Pathogenic Bacteria, for Students of Medicine and Physicians. By Joseph McFarland, M.D., Professor of Pathology in the Medico-Chirurgical College, Philadelphia. Second Edition, revised and enlarged. London: Henry Kimpton. 1898.

A Manual of Modern Surgery, General and Operative. By John Chalmers DaCosta, M.D., Clinical Professor of Surgery, Jefferson Medical College, Philadelphia. Second Edition. London: Henry Kimpton. 1898.

Diet and Food considered in relation to Strength and Power of Endurance. Training, and Athletics. By Alexander Haig, M.A. & M.D. Oxon., F.R.C.P., Physician to the Metropolitan Hospital, and the Royal Hospital for Children and Women. London: J. & A. Churchill. 1898.

A Clinical Treatise on Diseases of the Breast. By A. Marmaduke Sheild, M.B. Cantab., F.R.C.S., Senior Assistant Surgeon and Lecturer on Practical Surgery to St. George's Hospital. London: Macmillan and Co. Limited. 1898.

The Living Organism. An Introduction to the Problems of Biology. By Alfred Earl, M.A., of the Inner Temple, Barrister-at-Law. London: Macmillan and Co. Limited. 1898.

Essentials of the Diseases of the Ear, arranged in the form of Questions and Answers. By E. B. Gleason, S.B., M.D., Clinical Professor of Otology, Medico-Chirurgical College, Philadelphia. Second Edition, revised and enlarged. London: Henry Kimpton. 1898.

A Synopsis of Surgery. By R. F. **Tobin**, F.R.C.S.I., Surgeon to St. Vincent's Hospital, Dublin. London: J. and A. Churchill. 1898.

Transactions of the Grant College Medical Society, Bombay, from January to December, 1897.

Atlas of External Diseases of the Eye. By A. **Maitland Ramsay**, M.D., Ophthalmic Surgeon, Glasgow Royal Infirmary; Professor of Ophthalmology, St. Mungo's College, etc. Glasgow: James MacLehose and Sons. 1898.

An Atlas of Bacteriology. By **Chas. Slater**, M.A., M.D., M.R.C.S. Eng., F.C.S., Lecturer on Bacteriology, St. George's Hospital Medical School, and **Edmund J. Spitta**, L.R.C.P. Lond., M.R.C.S. Eng., F.R.A.S., Formerly Demonstrator of Anatomy, St George's Hospital Medical School. London: The Scientific Press Limited. 1898.

The Surgical Anatomy of the Lymphatic Glands. By **Cecil H. Leaf**, M.A., M.B. Cantab., F.R.C.S. Eng., Demonstrator of Anatomy at the London Hospital. Westminster: Archibald Constable and Co. 1898.

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An Additional Case of Double Congenital Microphthalmos; and What should the General Practitioner know about the Eye? By **Cassius D. Westcott**, M.D.

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THE

BIRMINGHAM MEDICAL REVIEW.

DECEMBER, 1898.

ORIGINAL COMMUNICATIONS.

THE TREATMENT OF GALL-STONE IMPACTED IN THE CYSTIC DUCT.*

BY GILBERT BARLING, M.B., B.S., F.R.C.S.

THE operation of cholecystotomy is now so well established and so safely performed in uncomplicated cases that in a meeting of this branch, where it found some of its earliest advocates, there is scarcely anything to be said that has not already been uttered. Perhaps, however, I may be allowed to emphasise one important point; it is, that in this as in all surgical operations in which viscera are involved, delay in surgical treatment brings with it complications which add considerably to the danger of operative interference.

In the case of renal stone the consequences of delay fall particularly upon the organ involved, and it becomes more or less maimed in its functions, the body excretion is interfered with, and nephrectomy frequently takes the place of what earlier might have been nephro-lithotomy, the kidney being then saved to perform its duties, and probably in some instances, to carry on functions which the one on the other side alone might not be able to perform.

In cases of biliary calculus, whilst more or less destructive changes *may* result in the liver, yet usually the functions of the organ are still carried on in such a way that so long as the common duct is not persistently obstructed the body suffers little harm unless we are to accept as a fact that cancer of the liver is sometimes induced. There is therefore no exact parallel in the dangers brought about by biliary calculi and renal calculi. Biliary calculi however bring with them their own special dangers, but these arise from the fact that the biliary apparatus is intraperitoneal. Inflammatory processes are started which, by setting up adhesions, cause interference with surrounding parts and inflict pain and ill-health, and, if suppuration is excited, it may be death upon those who suffer from gall-stones.

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* Read before the Birmingham and Midland Counties Branch of the British Medical Association, on Thursday, November 10th, 1898.

It is with the object of calling attention to these troubles that I venture to bring before you a short series of cases in which a gall-stone was lodged in the cystic duct. These cases, four in number, all of the kind I have met with, present somewhat interesting features, and I propose to read you brief notes of the cases and to make a few comments upon them.

Case 1.—*Gall-stone impacted in the cystic duct; distention of the gall-bladder; removal of the stone by incision in the duct; recovery.*

F. H., a stout female, aged 35, was admitted to the General Hospital under my care on February 18th, 1896, complaining of swelling in the right hypochondrium of sixteen months' duration. Her illness began in November, 1894, with severe pain coming on suddenly in the region of the gall-bladder, and accompanied by diarrhœa; there was neither vomiting nor jaundice. Three days afterwards a lump was noticed in the region of the gall-bladder. The patient had another attack of pain in the following March, and another in July.

Condition on admission.—On the right side of the abdomen just below the costal margin and external to the semi-lunar line, a rounded elastic swelling could be felt; it appeared about the size of a small orange; it descended on inspiration, and though not painful was tender with handling. The swelling could not be palpated in the loin. There was no jaundice.

The diagnosis made was distention of the gall-bladder, probably from stone in the cystic duct.

Operation February 24th.—Incision over the swelling revealed a distended gall-bladder and a stone was felt in the cystic duct close to the common duct. Five ounces of turbid mucus were withdrawn from the gall-bladder with the aspirator, the gall-bladder was then opened and found to be free from stones. A stone in the cystic duct could be felt with instruments from the gall-bladder, but it was so tightly impacted that prolonged manipulations failed to remove it; an incision was therefore made on to the stone which was dug out with a scoop and proved to be a barrel-shaped stone three-fourths of an inch long, and about half an inch in diameter. The incision in the duct was closed with sutures and the gall-bladder was stitched to the abdominal incision and drained.

Though the patient left the table in a very good condition, some hours afterwards she was very collapsed and shivery, and complained of a good deal of pain in the abdomen. On the following two days there was complaint of pain in the abdomen, which was somewhat full, the pulse quickened up to 100, the temperature rose to 100·5. There was no vomiting. On the third day after the operation there was complaint of much pain in the abdomen which was distended and generally tender; the patient looked ill, her pulse was 124 and temperature 101·5. Free purgation was now ordered with calomel and sulphate of magnesia which resulted in speedy improvement and the patient made an uninterrupted recovery afterwards.

Case 2.—*Gall-stone impacted in the cystic duct; distention of the gall-bladder; incision of the duct; drainage; recovery.*

F. B., aged 51, a stout and muscular man, was sent to me sometime during the year 1896, with a diagnosis of stone in the right kidney. He gave a history then of severe attacks of pain commencing in the right side of the abdomen and descending to the upper part of the thigh and testicle, the pain being occasionally associated with vomiting; jaundice had never been noticed during or after the attacks. There was sharp pain on percussion over the edge of the right erector spinæ in the costo-iliac space, but several microscopical examinations of the urine failed to detect either blood, pus, or crystals. The absence of the last-mentioned objects from the urine made the diagnosis so doubtful that I advised the patient to wait and see if further evidence could be obtained which would throw light on his condition. I did not see him again until February 3rd, 1897, when he returned to Hospital saying that he had suffered several attacks of pain and that they were getting worse. He was therefore admitted to Hospital and daily examinations of the urine made, but nothing was found suggestive of renal stone though the patient always gave the same account of his attacks of pain, viz., that they commenced about the region of the kidney and descended in the course of the ureter.

When almost decided to explore his kidney, on February 10th he fortunately had an attack of pain which threw the necessary light upon his case. On that day he was seized with an attack of very severe pain over the situation of the gall-bladder; this pain went through to the back between the shoulders. On palpation there was marked tenderness over the lower margin of the liver, and a doubtful lump was felt here about which it was difficult to speak definitely as the muscles were so rigid. During the next two or three days the tenderness subsided and there was no jaundice.

There was now no reasonable doubt that the patient was suffering not from renal, but from gall-stone, and on February 15th I operated upon him. Under the anæsthetic the gall-bladder could be distinctly palpated, and an incision was made directly on to it, when it was found to be distended to the size of a turkey egg, and a stone was felt in the ducts. After the gall-bladder had been emptied with the aspirator and opened, probing found that the stone was in the cystic duct, but it was so immovably fixed that scoop, forceps, and other instruments failed to dislodge it. An incision was made in the walls of the duct, and with considerable difficulty an almost circular stone about half an inch in diameter was removed. The incision in the duct was sutured and a drainage tube with gauze packing around it was passed down to the duct and brought out of the wound. The gall-bladder was stitched to the wound and also drained. The patient's subsequent history was quite uneventful and he was discharged with his wound soundly healed on March 17th.

Case 3.—*Gall-stone impacted in the cystic duct; localised suppurative peritonitis; operation; recovery. Recurrence of the suppuration; second operation; removal of the stone some days later; recovery.*

Mrs. F., aged 61. was seen by me on September 6th, 1897, in consultation with Dr. Vokes who had diagnosed peritonitis due to gall-stone. The history showed that for several years the patient had been the subject of attacks of colic beginning in the hepatic region with occasional slight jaundice.

On September 3rd, 1897, there was an attack of pain in the region of the liver extending to the back; the patient vomited and was slightly jaundiced. Morphia was administered with much relief to the symptoms until 2.30 p.m. on September 6th, when the pain returned very severely in the belly and in the back, and the patient vomited. When I saw her the abdomen was generally distended and rigid, but especially on the right side in the upper two-thirds where it was extremely tender, but no tumour could be palpated. At this time the temperature was 101, pulse 112, and there was frequent vomiting of bile-stained fluid; there was no noticeable jaundice. The patient was extremely ill and had the facial expression of severe abdominal inflammation.

The diagnosis of peritonitis starting from the gall-bladder was confirmed, and the abdomen was opened in the right hypochondrium, just outside the semi-lunar line. About half a pint of sticky purulent fluid at once escaped. There was extensive matting of the stomach, intestine, and of the tissues underneath the liver, but no gall-stone could be palpated either in the gall-bladder, in the ducts, or loose in the belly cavity. The patient was too ill to permit of a prolonged search, so the abdomen was drained and the wound closed. For two days she remained very ill, with vomiting, distention, and constipation, but when the bowels had been evacuated and rectal feeding alone was employed, speedy improvement took place, and at the end of five weeks the patient was able to be up.

A few days after she got up her old pain returned, she again vomited, her temperature began to rise, and the abdomen became tender and rigid, and on October the 20th she was admitted to the General Hospital. She looked very ill and distressed, her pulse was about 100, temperature 103, and the upper part of the abdomen was distended, rigid, and tender. The abdomen was opened through the old scar, and a quantity of pus, estimated at about a pint, was found running down underneath the liver to the posterior part of the cavity. The gall-bladder, which was distended, was opened and some ounces of pus evacuated, but no gall-stone was found in it, nor could any be felt in the cystic duct with a probe. The course of the ducts could not be traced owing to the extensive matting of parts, but there was no indication of stone to be felt anywhere, either inside or outside the duct. The gall-bladder was then stitched in the incision and drained, and another drainage tube was placed underneath the liver and brought out in the wound which was then closed. Steady progress towards recovery was made, and from time to time a probe was passed down the gall-bladder to determine whether any gall-stone had worked back from the ducts.

On November the 3rd the probe felt some hard substance which was, from its depth, located in the cystic duct. By the aid of various forceps portions of a gall-stone were removed. For the first time bile was discharged from the gall-bladder, and on three subsequent days portions of gall-stone were removed, the fragments altogether making up a stone which would be the size of a filbert. The discharge of bile soon ceased, the suppuration subsided, and the patient was discharged from hospital on November 28th, the incision being entirely healed except where the drainage tube still led into the gall-bladder. No other stones or fragments of stones appeared, but the tube was retained in the gall-bladder, lest there should be any more, for three months longer, but none appeared. At the present time the patient is well and free from her old attacks; a tiny sinus remains, however, from which a little mucous discharge takes place. It is probable that the cystic duct is completely stenosed.

Case 4.—*Stone in the cyctic duct; removal through a contracted gall-bladder; recovery.*

S. G., female, aged 44, was admitted to the General Hospital September 9th, 1898, complaining of attacks of pain in the upper part of the abdomen, and of slight jaundice. Her history showed that a year previously she suffered from jaundice, which came on without pain. Three months later she had her first attack of pain, commencing in the right hypochondriac and epigastric regions, and running through to her back between the shoulders. Since then she has had many similar attacks, which have often lasted for hours. Sometimes they commenced with shivering, and practically always caused vomiting and sweating. From time to time the patient noticed that she was rather yellow, and that her clothing was also stained yellow. She had lost much flesh. When admitted the patient was free from pain, but was tender on examination both over the gall bladder and in the epigastrium, especially in the latter situation, but no tumour could be made out; there was slight jaundice. On September 13th patient had an attack of pain in the upper part of the abdomen, accompanied by smart shivering. Operation September 16th. The abdomen was opened through the right semi-lunar line, and a good deal of adhesion found of the colon and pyloric end of the stomach to the liver; the gall-bladder could not be seen. Some of the adhesions of the colon to the liver were so dense that they could not be separated, but on working more towards the middle line it was found possible to break up the adhesions between colon and stomach, and eventually a stone was felt in one of the ducts, and, quite towards the posterior part of the liver, a gall-bladder about the size of a small walnut was found.

Its walls were much thickened, and when the cavity was opened only a little thick mucus escaped. With the aid of a scoop a small gall-stone was dug out of the cystic duct, and this was the only one found, but as it bore some slight facets it had undoubtedly originally been associated with others. The gall-bladder could not be brought up to the incision, and its walls were too friable to be closed with sutures, so a glass drainage tube was passed down to it, gauze was packed around this, and the remainder of the abdominal wound closed. For the first few days there was a profuse discharge of bile, but this gradually ceased and the patient made an uninterrupted recovery, leaving the hospital cured on October 17th.

A curious incident occurred during convalescence. On October 1st, when she was just at the end of a menstrual period, she passed from the vagina a polypoid growth the size of a small pear. It appeared to have come from the anterior lip of the cervix, and its pedicle had evidently undergone slow erosion.

The diagnosis of gall-stones in some part of the biliary tract is generally an easy matter, though cases occasionally arise in which exploration only can settle the question definitely. In a number of cases it is possible to locate the stones in a particular part, for instance, in the common duct, but the presence of gall-stone impacted in the cystic duct, though suspected strongly, cannot be diagnosed with the precision that may obtain with the same condition in the common duct. Given attacks of colic arising in the region of the gall-bladder and passing through to the back, absence of jaundice or its presence in only a slight degree, and a distended gall-bladder, there is strong presumption that the cystic duct is blocked by a stone. This presumption would be strengthened if there were in addition sharp pain on percussion over the edge of the right erector spinæ just below the last rib.

Percussion pain in the loin has for a long time been valued as an indication of renal stone, and in the second of my cases it appeared to confirm the history given by the patient, which pointed so strongly to renal stone. The sequel showed, however, that the patient had been educated, quite unconsciously no doubt, in his symptoms, for his seizure in hospital was a characteristic biliary colic, and his case simply emphasises the necessity of not putting leading questions when investigating patients' conditions.

Turning again to the four cases we find that in three of them the gall-bladder was distended, twice with turbid mucus and once with pus, whilst in the fourth the gall-bladder was shrunken to very small dimensions. In the first three there was probably complete obstruction of the cystic duct, in the fourth incomplete, or, it may be, intermittent obstruction. In all there was a certain amount of adhesion from previous peritonitis, but in cases 3 and 4 this reached to an extreme degree, involving stomach, colon, small intestine, and liver. In the third case there was infection, but unfortunately the exact nature was not defined by cultivation. It was not due to the bacillus coli commune, for the characteristic smell found in abscesses from this organism was absent, and there was no free gas in the cavity.

In no case of gall stones have I seen a more serious lesion produced than in the patient I am now referring to. At the time of both operations she was extremely ill, so much so at the first that I could only venture to do what was urgently necessary to relieve her at the time, anticipating that if she recovered some future operation would be necessary to relieve her permanently. This I may mention in passing is the lesson to be learnt when treating many acute inflammatory lesions in the abdominal cavity.

In dealing with stone in the cystic duct I prefer to make the usual vertical incision rather than a horizontal one, which has its advocates. It gives sufficient access and divides less muscular tissue, leaving a firmer scar. In each of my cases there was some variation in the method of removal of the stone and subsequent treatment. In the first case the stone was so firmly fixed in the ducts that manipulations outside the tube and from inside the gall-bladder made no impression on it. I therefore incised the duct and dug the stone out with a scoop, preferring this course to either crushing the stone in situ or needling it and leaving the fragments to be subsequently extracted. The duct was then closed with sutures, and, relying upon them to prevent any escape of bile or mucus, I neglected the precaution to pass a drainage tube down to the incision in the duct. My temerity brought about a sharp attack of peritonitis, due I have no doubt to leaking from the incised and sutured duct; happily the patient eventually made a good recovery. The lesson was not however lost upon me, for in Case 2, in which I had exactly similar conditions to deal with, after suturing the incised duct, I passed a drain down to it from the abdominal wound, and the patient made an unchecked recovery. In Case 3 I was extremely disappointed at the second operation not to find and remove gall-stone, the more so as I had laid stress upon the presence of a stone or stones to the patient as being the cause of her illness, and a removable one. I still had faith in the diagnosis, however, and was rewarded by the eventual extraction of the offender, and, looking to the difficulty there would have been in removing the stone through the duct walls by incision, I feel that its extraction in fragments through the still open gall-bladder on the twelfth day was a fortunate accident.

In the fourth case the immediate extraction of the stone from the duct through the still open gall-bladder was easy, and this of course is the method always to be adopted if possible. This case again illustrates how little we have to fear from the escape of bile if provision is made by efficient drainage for its ready escape from the abdominal cavity. Here the tiny gall-bladder had to be left, freely open deep down in the abdomen, and the only precaution taken was to pass a glass drainage tube down to it packed around with strips of gauze. Though there was a flood of bile from the tube the first few days after the operation, there was no sign of peritonitis or anything else unsatisfactory.

THE DIAGNOSIS OF SUPPURATION IN THE ACCESSORY CAVITIES OF THE NOSE.*

BY WILLIAM LAMB, M.D. EDIN., M.R.C.P. LOND.

THE occurrence of suppuration in certain of the accessory sinuses of the nose has long been known. The condition was earliest recognised in the maxillary antrum and the frontal sinus, and this no doubt for two reasons:—(1) They are the cavities most frequently affected. (2) Their superficial position causes them, when distended, to bulge externally, and present signs which it is impossible to overlook.

The condition which was most frequently described was practically that of *abscess*—a closed and distended cavity with signs of tension, and pressure on neighbouring parts:—what would now be termed a "closed empyema."

The more frequent condition of "open empyema," *i.e.*, a suppurating cavity discharging pus more or less continuously, or with periodic exacerbations, was not generally recognised till later, and even then I fancy it was comparatively seldom diagnosed in practice. As a student and house surgeon attending the surgical practice of a large general hospital I do not remember to have seen a single case treated. "Purulent rhinitis" was the diagnosis which covered most cases of nasal suppuration, and Ziem was the first to lay down as a cardinal principle in nasal surgery that such a diagnosis ought never to be made, unless (1) A local cause could be found (caries, foreign body); (2) The accessory cavities could be excluded. This was in 1886, and it is only since then that the subject has engaged any considerable share of the attention of the profession.

It is no part of my intention to go into the history of the subject, but amongst pioneers in this country may be mentioned,

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* Read before the Midland Medical Society, 2nd Nov., 1898.

Heath, Watson, Lennox Browne, Greville Mac Donald, and Dundas Grant; and abroad, Ziem, Grünwald, Hartmann, the anatomist Zuckerkandl, and, most recently, Hajek, who, in addition to other services, has helped much to systematise our knowledge.

The name "*empyema*," which is coming into general use for these collections of pus, is short and convenient. They are sometimes divided into (*a*) open, and (*b*) closed empyemata; but this is not a good basis of classification, as the condition often varies at different times in the same case—a state of more or less complete intermittence being not uncommon.

To come at once to the practical part of my paper. What symptoms does a nasal empyema generally give rise to? What symptoms in a patient ought to excite suspicion, or at least make one think of it as a possibility?

In the first place it may be said that when the diseased cavity is completely closed the symptoms are severe, and there is of course no discharge; when it is incompletely closed the discharge is more or less intermittent, and the subjective symptoms vary accordingly.

Of all subjective symptoms headache is the most constant, but the situation and character of the pain varies much. Sometimes it is accurately referred to the seat of disease, *e.g.*, the central supra-orbital headache of frontal empyema, but more frequently the site of the headache affords no very definite clue to the seat of disease. Supra-orbital headache is very common in antrum cases, but temporal headache is also common enough.

Headache on the vertex, and occipital headache, are often associated with sphenoidal empyema. Pain and tenderness on pressure about the root of the nose are frequently present in ethmoidal disease. A deep-seated stupefying headache is suggestive of sphenoidal or ethmoidal disease, and so also are symptoms like vertigo, torpor, and incapacity for mental work.

Sometimes periodic attacks of headache closely resembling migraine are the chief symptom. I have known them to persist for years without the cause being suspected.

Grünwald attempts to explain the periodicity of these headaches by the periodic overflow of discharge from the diseased cavity, and this explanation may serve for some cases, but hardly suffices for others in which the periodicity is almost as accurate and punctual as in malaria.

It must not be supposed, however, that leading symptoms such as headache are always present. For instance, some months ago a woman of 45 consulted me for various discomforts about her throat. Her throat was normal, but on making a routine examination of the nose I found well-marked disease of the sphenoidal sinus, apparently of old standing. Whether the paræsthesiæ in that case were the result of the sphenoidal disease I do not know (they might have been due to the menopause), but at all events they were the only subjective symptoms present.

According to Grünwald intolerance of alcohol and tobacco is common in the subjects of nasal empyema, and this disability he says is removed by successful treatment. No doubt attaches to Grünwald's cases, but other observers have not confirmed this as a general rule.

Neuralgia, especially of the supra-orbital nerve, is common in antrum cases, and neuritis of nerves in the neighbourhood of the affected cavity occurs, especially when the cavity is *closed.*

In the walls of the maxillary antrum run the anterior and posterior dental nerves, and the infra-orbital nerve; and these may all be affected when the cavity is diseased. When the antrum is distended with pus the pain and hyperæsthesia of the whole side of the face may be intense.

Optic neuritis occurs sometimes in sphenoidal empyema, and shrinking of the visual field has been noted by Berger and Tyrmann. Ptosis and strabismus may also arise from implication of the nerves in the sphenoidal fissure.

General symptoms of disturbed health, such as anæmia and dyspepsia, are common in chronic cases, and are I think simply the result of chronic suppuration, intensified by the swallowing of more or less septic pus.

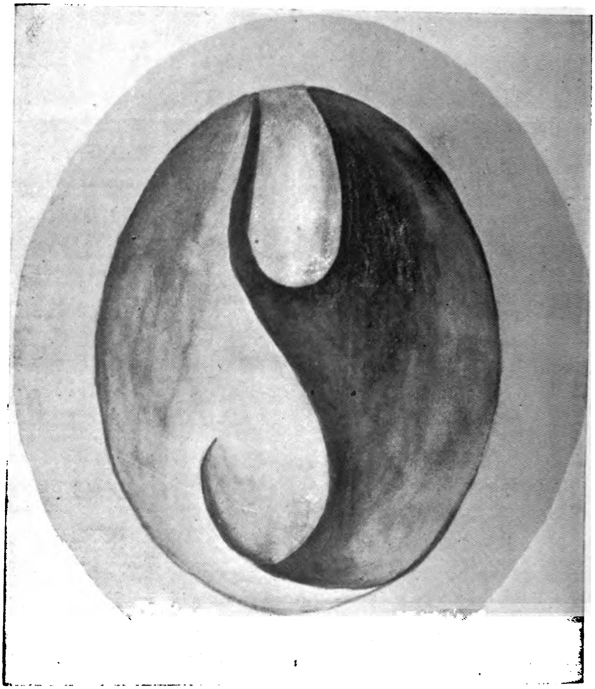
So much for subjective symptoms. Let us now look for a moment at certain ***extra nasal signs*** which may arise in the case of "closed empyemata"—abscesses in fact. In the case of the antrum the cheek may be swollen and tender, and parchment crackling may be felt on palpation, from thinning of the facial wall An ethmoidal abscess displaces the eyeball outwards, and may point at the inner side of the orbit in the region of the lachrymal bone. A distended frontal sinus may displace the eyeball downwards and outwards causing ptosis, diplopia, and œdema of the upper lid. A sphenoidal abscess may cause exophthalmos, in addition to ptosis and strabismus, from implication of the nerves in the sphenoidal fissure.

Brain symptoms—meningitis and abscess—arise occasionally by extension in the case of all of them. Tumour formation, to which all the accessory cavities are liable, may very closely simulate abscess. A differential diagnosis may be impossible without operation. But the great majority of cases of nasal empyema present no signs so obvious as swelling of parts, or displacement of organs, and they are only to be diagnosed by careful examination through the anterior and the posterior nares.

The sign most suggestive of Nasal Empyema is a discharge of pus from the nose. Generally it is from one nostril, and it often varies with the position of the head. The discharge may be slight and intermittent, little remarked by the patient, or it may take place chiefly by the posterior nares and so escape notice; but as a rule the patient notices a discharge of pus from one nostril, and often complains of a bad smell in the nose. Thus then a unilateral discharge of pus suggests empyema, and the next step in diagnosis is to eliminate the other conditions which may give rise to this sign. These are:—

1. Foreign body. This applies chiefly to children, as sane adults do not introduce foreign bodies into the nose. Just as a discharge of pus from one nostril in an adult suggests empyema, so the same sign in a child suggests foreign body. If the suspicion occur to one the diagnosis is easily made, and this remark I think is one that has a general application. It is the things we do not suspect that we make mistakes about.

FIGURE I.



The Anterior Rhinoscopic Image.
(Semi-diagrammatic, after McBride.)

2. Syphilis causing bone disease and suppuration. Bare bone can be felt with the probe, generally on the septum or floor of the nose.

3. Tubercle Masses of exuberant granulations most frequently on the cartilaginous septum.

4. Malignant disease, especially epithelioma of the antrum, may cause a very free flow of pus.

5. Injury. Abscess on one or both sides of the septum may follow a blow on the nose; but the diagnosis is evident.

6. Post nasal adenoid growths often cause some discharge of pus from the nose.

Having eliminated these causes by inspection and the use of the probe (and this is generally very soon done), our suspicion of the existence of empyema of one of the accessory cavities is very greatly strengthened and we proceed to the systematic examination of the nose in order to trace the pus to its source.*

In order to trace the pus to its source let us glance for a moment at some features of the anterior rhinoscopic image as seen by reflected light through an ordinary nasal speculum.

On looking into the nostril the anterior part of the lower turbinated body comes into view, and the corresponding part of the septum The lower turbinated body is seen to overhang the lower meatus, and is found to be very variable in size and shape.

The septum is seen to be frequently irregular, very often showing a well-marked thickening or ridge at the junction of the vomer with the cartilage. On tilting the patient's head backwards the middle turbinated body comes into view. It is generally smooth, shiny, and paler in colour than the inferior, and overhangs the middle meatus. By tilting the head still further back the anterior attachment of the middle spongy bone can be seen, and the angle it makes with the outer wall.

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* The pus is often described as of a canary-yellow colour. It is often of this colour, and is not as a rule very offensive, though patients often complain of the odour. But it may be of almost any colour, and blood-stained or mixed with mucus. The canary-yellow colour is due to the presence of the staphylococcus aureus, of which the discharge is, in many cases, an almost pure culture.

Between the middle turbinated body and the septum is a narrow chink—the olfactory fissure—so called because it is the entrance to the olfactory, as distinguished from the respiratory region ot the nose.

Let us now look at that part of the middle meatus which lies hidden from view under cover of the middle turbinated body. This is the most important region of the nose from a surgical point of view, and as it is out of sight in the living body an intimate acquaintance with its topography is all the more important.

I show you here a preparation of the outer wall of the nose with the soft parts in position. I have partly detached the middle turbinal, and have turned it up like a lid so as to show what is beneath.

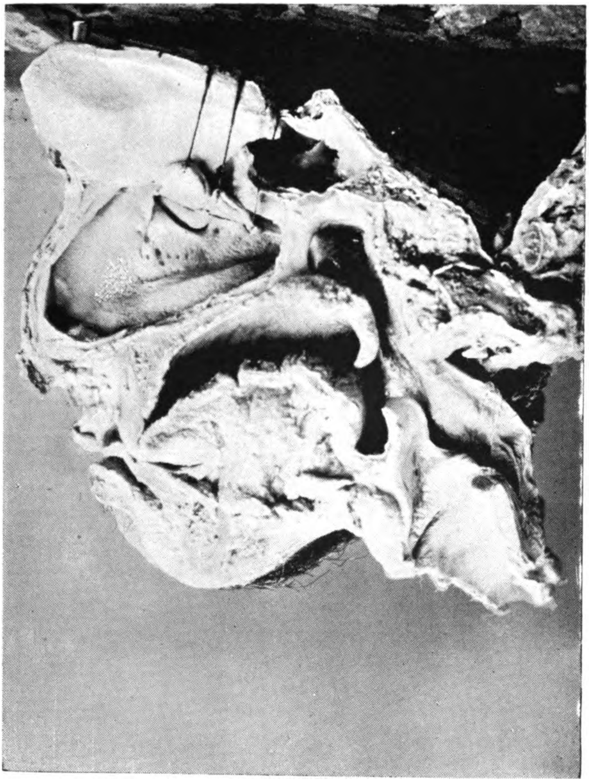
We see a well marked cleft or fissure curving downwards and backwards, the concavity of the curve being directed upwards and backwards. This cleft was named by Zuckerkandl the Hiatus Semilunaris. Its lower and anterior edge you will notice is raised and sharp, with the mucous membrane pretty tightly stretched over it. On referring to the skeleton this raised edge is seen to be formed by the unciform process of the ethmoid.

Above and behind, the hiatus is bounded by a more or less prominent bulging. This is one of the lowest of the ethmoidal cells, and as it is generally large and well developed it received from Zuckerkandl the special name of Bulla Ethmoidalis.

The Hiatus Semilunaris is continuous with the infundibulum, of which in fact it is the natural exit. The infundibulum leads upwards and forwards into the frontal sinus, and downwards and backwards into the antrum of Highmore.

The importance of the hiatus semilunaris lies in the fact that it is the natural outlet of the infundibulum; and as various of the accessory cavities open more or less directly into the infundibulum, discharge from these cavities flows through the hiatus and makes its appearance in the nose at the lower border of the middle turbinated body.

FIGURE 2.



The outer wall of the Nasal Cavity.

The septum and middle turbinal have been partly detached and turned up to show the Hiatus Semilunaris, and the Bulla. The inferior turbinal is in position. (From an original preparation).

FIGURE 3.

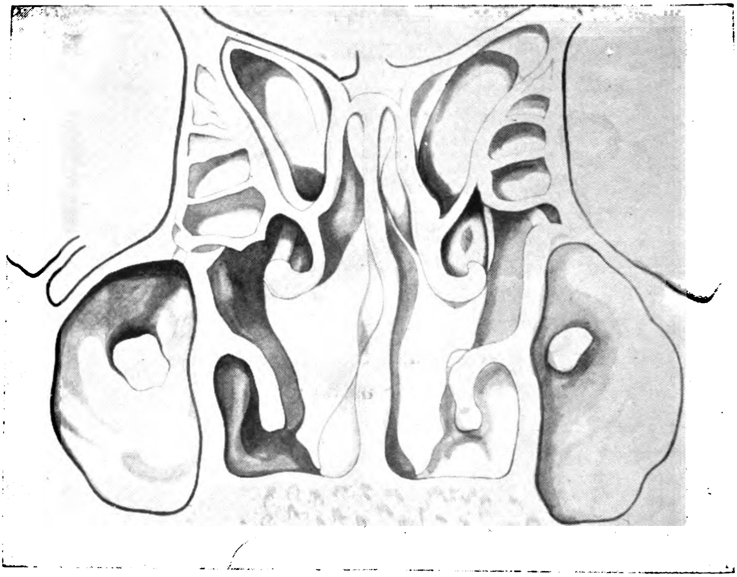


Figure 3 represents a transverse vertical section through the Nasal Cavities at the level of the 2nd bicuspid tooth, dividing the ostium maxillare. It shows the general arrangement of parts in a typical case (After Fraënkel).

The section extends from the Crista Galli above to the hard palate below. In the middle line is the septum, presenting a slight deviation. On each side of the septum at the upper part is the olfactory fissure, which is bounded externally by the frontal sinus, above, and the middle turbinal below. The frontal sinus is large, and extends as far down as the attachment of the middle turbinal. Externally to the frontal sinus, lying between it and the orbit, are the ethmoidal cells, which are seen to form the roof of the middle meatus. The maxillary antrum is well developed, and extends as usual below the level of the floor of the nose.

We have already seen that the frontal sinus opens into the infundibulum, which is continuous with the hiatus. The maxillary antrum opens, normally, into the bottom of the infundibulum near its posterior end; and the anterior ethmoidal cells open generally just above the anterior part of the hiatus, so that they also necessarily drain through it. Thus, discharge from the antrum, the frontal sinus, and the anterior ethmoidal cells, drains through the hiatus, and becomes visible in the nose at the lower border of the middle turbinated body. This is the first and most frequent situation in which pus from empyemata is to be looked for.

The second situation in which pus should be looked for, is the narrow chink between the middle turbinated body and the septum: the so-called olfactory fissure. This is quite a narrow chink, often so narrow that a comparatively slight swelling of the mucous membrane occludes it, and the pus is then forced to find its way into the third situation, the naso-pharynx, where it may be seen with the post nasal mirror, coating the vault and posterior wall, often more or less crusted, or lying in the posterior nares, and covering the end of the middle turbinal.

Now the cavities which furnish pus to the olfactory fissure and naso-pharynx are the posterior ethmoidal cells and the sphenoidal sinus, both of which you will remember open into the superior meatus.

We may thus, for diagnostic purposes, divide the accessory cavities into two groups:—(1) The anterior group, embracing the antrum, the frontal sinus and the anterior ethmoidal cells, which open into the infundibulum and drain through the hiatus semilunaris into the middle meatus. Pus from this group appears at the lower border of the middle turbinated body. (2) The posterior group, embracing the sphenoidal sinus and posterior ethmoidal cells which open into the superior meatus. Pus from this group appears in the olfactory fissure and naso-pharynx.

It is of course obvious that if a discharge of pus be at all copious it will find its way to the floor of the nose, whence it will have free access to both anterior and posterior nares. In such a case, if there is any difficulty, the nose should be cleaned, and examined afterwards at short intervals till the pus can be traced to one or the other of the situations I have indicated. The patient may be directed to sit leaning forward, the elbow resting on the knee, and the head supported by the hand—the suspected side being uppermost.

The shape of the inferior spongy bone influences the *direction* of the flow of pus; and so also does the exact point at which pus emerges from the hiatus. But these circumstances are easily allowed for, and cause no difficulty in diagnosis.

Let us next consider how far it is possible to make a differential diagnosis of disease of the different cavities of each group. The simplest way of doing this will be to suppose a case, and indicate the successive steps of a systematic examination. A patient has discharge of pus from one nostril, and by inspection and the use of the probe the various sources of fallacy already mentioned have been excluded. Pus flows from the hiatus, and shows itself in the middle meatus, at the lower border of the middle turbinated body. The probability is, of course, that it comes from the antrum, for the antrum is much more frequently diseased than any other cavity, and the antrum is therefore first examined.

The middle meatus is cocainised, and while waiting for the cocain to take effect, transillumination is tried. If the suspected side appear dark, one's suspicion is strengthened, but the method has no very high diagnostic value, except as a confirmatory sign.

The middle meatus being now insensitive an attempt is made to pass a probe into the antrum through the natural opening. The probe is bent upwards at a right angle about 1 cm. from the point, and the handle is bent downwards at an obtuse angle, in order to facilitate manipulation. The instrument is passed well back under the middle turbinal till it is behind the hiatus, and it is then drawn carefully forward till it catches on the lip of the hiatus; by following which, in a certain proportion of cases, the point will be felt to become engaged in an opening. The percentage of cases in which this desirable result may be attained can hardly be stated in figures. Some operators say that they succeed in 40 per cent. of all cases. My own impression is that where the opening of the antrum is strictly speaking in the normal position, *i. e.*, at the bottom of the groove of the infundibulum, the percentage of successes will be considerably less than 40 per cent; but on the other hand, in cases presenting the so-called accessory opening into the antrum, there is no great difficulty, and success ought to be the rule.

The accessory opening occurs in about 10 per cent. of all cases, according to Zuckerkandl. It is situated lower down and farther back than the normal opening, and is simply a defect—probably an acquired defect—in the double thickness of mucous membrane which at this point forms the whole thickness of the antral wall. It is very likely I think that this part of the wall is sometimes perforated by the examining probe, which thus creates an accessory opening. If so no harm is done. It is at this point too—the membranous part of the antral wall—that a closed empyema sometimes "points" into the middle meatus.

The finding of the natural opening is not of much consequence in the case of the antrum, it is much more important in the case of the frontal sinus, inasmuch as it may obviate the necessity for an external operation.

A natural opening having been found, the cavity can be washed out and the diagnosis confirmed or the reverse. If no natural opening be found an artificial one must be made, either—(*a*) through the middle meatus, by Hunter's method—an easy method for diagnosis, but not to be recommended for treatment; (*b*) through the lower meatus, as Miculicz recommends—a good method for diagnosis, but painful and inconvenient for treatment; or (*c*) through the socket of a tooth, preferably the palate socket of a molar.

For purposes of diagnosis only, puncture from the interior of the nose is to be preferred, unless, indeed, the patient should happen to have a diseased molar, which ought in any case to be removed.

In puncturing from the lower meatus a strong curved needle attached to a syringe is sufficient. The point must be introduced well back under the lower turbinal, and the puncture made in an outward and upward direction, where the bone is very thin, about 1½ inches from anterior nasal spine.

Before puncturing through the socket of a tooth it is important to note carefully the curvature of the nasal and facial walls of the cavity, as if this precaution be neglected it is quite possible that the drill may emerge either in the canine fossa or in the nasal cavity. The antrum is often narrow in front, and in such cases its lower wall or floor is nothing more than an angle or corner between the nasal and facial walls. The preparations numbered 1 and 2 show this to some extent.

The risk of the drill puncturing the nasal cavity instead of the antrum is by no means a fanciful one. A case lately came to my knowledge in which this had happened, and daily syringing had been practised without the mistake being discovered. The liquid returned through the nose, and the antrum continued *in statu quo*.

Examination of the nose during the syringing would of course have disclosed the fact that the liquid was returning along the lower meatus instead of through the ostium maxillare.

Simple puncture and aspiration is not always sufficient to demonstrate the presence of pus in the antrum, as the pus may be too thick to be sucked into the syringe. It is therefore necessary when a negative result follows the puncture to inject normal saline solution and wash out the cavity, when if inspissated pus be present it will become evident.

Partitioned antrum may be mentioned as a condition which has led to error in diagnosis—the suppurating chamber being opened by the exploratory puncture, and the healthy chamber by the permanent opening. Hajek and Schmidt have recorded cases.

As regards diagnosis, the antrum is now disposed of. If diseased it is washed out till the solution returns clear; if healthy it is excluded from the diagnosis.

If now just after the antrum has been thoroughly cleaned, we find pus still exuding from the hiatus, we know that it must proceed either from the frontal sinus, or the anterior ethmoidal cells. Pus from these cavities generally appears just in the angle between the anterior attachment of the middle spongy bone and the outer wall.

The frontal sinus is first examined.

The probe is bent upwards at the point from ⅛ to ¼ of a circle. It is passed into the angle between the middle spongy bone and the outer wall, at first upwards for about 1 cm., and then upwards and forwards, inclining the point slightly towards the septum in order to avoid the ethmoidal openings.

In some cases the probe may in this way be introduced into the frontal sinus. The patient can sometimes feel that it is in the sinus, and pus often wells out alongside the probe and runs down it.

The curve of the probe may have to be altered two or three times, as the curve that will suit one case will not suit another. The distance from the entrance of the nostril to the frontal sinus is about 7-8 cm. in an adult.

In the majority of cases it will probably be found better not to spend very much time in attempting to pass the probe through the natural channel, but to proceed, and remove the anterior part of the middle turbinal (the so-called operculum or lid), thus rendering the frontal sinus tolerably easy of access. It is often found, in cases of empyema, that the thin walls of the infundibulum have become so dilated that the suppurating cavity extends as far down as the insertion of the middle spongy bone, besides which the bony walls may be broken down or eroded, and thus the probe enters at once a large cavity which is continuous with the frontal sinus, and which is easily enough washed out and drained.

Other difficulties of access to the frontal sinus arise chiefly in connection with irregular developments of the anterior ethmoidal cells encroaching upon the infundibulum. Preparation No. 3 shows this condition of parts very well. Such encroaching cells have by some surgeons been broken down with a strong probe, but that is a proceeding which I think few would care to undertake so very near to the cribriform plate and the cranial cavity.

Seeing that the natural exit from the frontal sinus is at the lowest point of the cavity, it might be supposed that retention of pus in it would be extremely rare. It is true that it is much less frequently diseased than the antrum, but it probably comes next to it. A good many cases may escape notice, as it is not uncommon for the pus to burst spontaneously into the nose.

The conditions which cause retention of pus in the frontal sinus are easily produced in all cases in which the natural opening is small, or in which the infundibulum is encroached upon by the anterior ethmoidal cells (as in preparation No. 3). In such cases any considerable swelling of the mucous membrane, or the presence of polypi in the hiatus, or the pressure of a septal growth, may reduce the natural opening of the sinus to such small dimensions that the contents of the cavity are, as it were, hung up by atmospheric pressure, in the same way that beer is retained in a barrel when the vent peg is tight.* The introduction of a probe allows air to pass up, and the pus wells out by the side of the probe.

The antrum and frontal sinus having been dealt with and cleaned, it is obvious that the continued appearance of pus in the hiatus indicates disease of the anterior ethmoidal cells.

Grünwald proposes to shorten the somewhat tedious process of diagnosis by the use of tampons. Thus he plugs the central and posterior part of the hiatus in order to shut off the antrum; and he packs gauze up under the anterior attachment of the middle spongy bone in order to exclude the frontal sinus, and also sometimes in cases of doubt, to provoke an increased discharge by damming it back for a time.

Temporary retention of discharge in a cavity may sometimes be overcome by the use of cocain, which acts by reducing the swelling of the mucous membrane round the opening of the affected cavity.

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* Greville Mac Donald.

To return to the anterior ethmoidal cells.—Pus may be traced to them certainly enough by way of exclusion, but direct evidence of ethmoidal disease is also often obtainable. Bare bone may not unfrequently be felt under the middle turbinal in the roof of the middle meatus, and the middle turbinal itself is often swollen and very tender.

Again, one or other of the ethmoidal cells may be so enlarged and distended with pus, as to become visible as a swelling in the middle meatus, pushing over the middle turbinal, which may in consequence undergo pressure-atrophy. It may be the bulla ethmoidalis which is thus affected, or another ethmoidal cell, and it is in such cases that the appearance is produced which Woakes described as "*cleavage of the middle turbinal.*" The term describes the appearance but not the fact. There is no cleavage of the middle terminal, but there is a swollen ethmoidal cell pressing against the middle turbinal, so that the two form one swelling, and the "cleavage" is between the middle turbinal and the enlarged ethmoidal cell. It is possible that the hypertrophied unciform process may sometimes form the outer half of the swelling, but I think it is more frequently a distended ethmoidal cell.

Sometimes an ethmoidal cell is developed in the anterior end of the middle spongy bone, and an ethmoidal abscess, pointing in the orbit, has been drained into the nose by opening such a cell.

I have seen an appearance resembling cleavage in a nose which was not affected with any suppurative disease, and in that case it was bilateral, and was produced, apparently, simply by the abnormal development of the bulla ethmoidalis.

Before leaving this anterior group of cavities which open into the hiatus semilunaris, I must mention certain signs which are frequently seen in suppurative disease of any or all of them. I refer to the presence of polypi, granulations, and hypertrophies of the mucous membrane. Polypi are present in about one-third of all cases. They grow frequently from the hiatus and from the lower border and concave surface of the middle turbinal. They are redder in colour and firmer in consistence than ordinary mucous polypi, and they are generally found only in one nostril, while mucous polypi most frequently affect both nostrils.

Granulation tissue frequently fills the concavity of the middle turbinal in these cases, and hypertrophies are seen on its lower border and inner surface. The cold snare and the sharp spoon are often required to clear away these obstructions before the diagnosis can be established with certainty, and in any case as a first step in treatment.

Combined Cases.—It is not at all uncommon for suppuration to affect more than one cavity, and considering the conformation of the parts this is not to be wondered at, for it is obvious that pus flowing down from the frontal sinus or anterior ethmoidal cells would be extremely likely to find its way into the antrum, which would thus act as a reservoir. In addition to this mode of infection it is probable that in many acute cases several cavities are simultaneously infected by extension from the nasal mucous membrane, as for example in influenza. I have said nothing about sounding the anterior ethmoidal cells through the natural openings because although the natural openings can sometimes be found, yet practically they are unimportant in diagnosis. Their positions are extremely variable—as variable as anything in the body according to Zuckerkandl—and their only practical importance lies in the fact that the probe may very easily find its way into one of them instead of into the frontal sinus. This is well shown in preparation No. 1.

We come next to the posterior group of accessory cavities comprising the sphenoidal sinus and the posterior ethmoidal cells. They open into the superior meatus of the nose, and pus from them makes its appearance in the olfactory fissure and naso-pharynx. As might be expected from their very close anatomical association these cavities are frequently simultaneously involved in suppurative disease.

The sphenoidal sinus is first examined. Now the anterior surface of the sphenoid is not ordinarily visible through the

FIGURE 4.

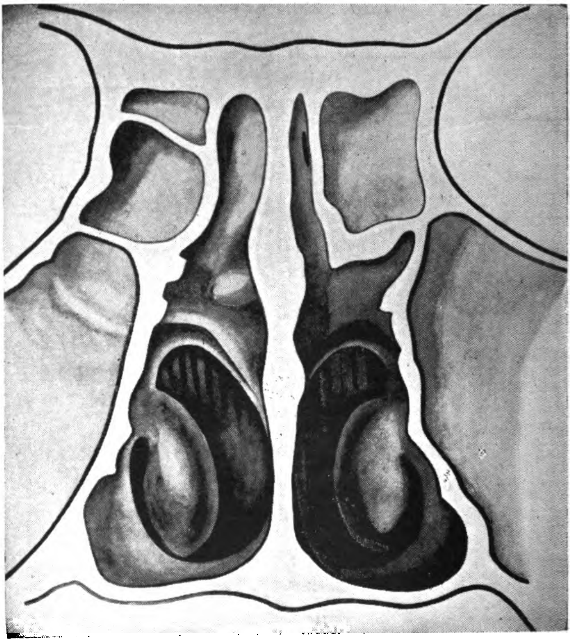

Figure 4 represents a transverse vertical section through the posterior part of the nasal cavity, just in front of the posterior nares. The view is straight back into the naso-pharynx. (After Zuckerkandl).

On each side of the septum, below, are the posterior nares, above is the body of the sphenoid. The posterior nares are bounded superiorly on each side by two folds of mucous membrane, which form the anterior choanal arch. Below and laterally is seen the rounded bulging of the tubal swelling, in the concavity of which lies the opening of the Eustachian tube.

On the posterior wall of the naso-pharynx, and just showing below the anterior choanal arch, are the vertical ridges and furrows of the lower part of the pharyngeal tonsil.

Above the posterior nares is the body of the sphenoid, presenting at its upper part the (in this case) slit-like openings of the sphenoidal sinuses.

nasal speculum. The most that can be seen when the middle turbinated body is entire is, in some cases, part of the anterior arch of the Choanæ crossing from the lower border of the middle turbinated to the septum.

Fig. 4 shows the relation of parts in a semi-diagrammatic way.

In a roomy nasal cavity where the olfactory fissure is wide, a probe may be passed across the middle turbinal to the sphenoid, and the diagnosis confirmed by the detection of bare bone; but in the majority of cases it will be necessary to bring into view some part of the anterior surface of the sphenoid, and this can only be accomplished by removing part of the middle turbinal; generally the posterior part, but in any case the part that is most in the way. Scissors or the conchotome may be used for this purpose, but as hæmorrhage is apt to be free the snare is preferable. When hæmorrhage has ceased a probe slightly bent up at the end is passed back to the surface of the sphenoid, and the opening of the sinus is felt for. There is sometimes a little hollow at the spot, or a drop of pus exuding may indicate the position, but the opening is generally more of a short channel than a simple orifice, and the simplest plan is just to push the probe cautiously through. Often bare bone will be felt, and a comparatively slight pressure is sufficient. When the probe is withdrawn a hook should be introduced into the opening, and part of the anterior wall broken away in a downward direction. It is a good plan as soon as the opening is made to let the patient close his other nostril and blow the nose vigorously. In this way lumpy masses of muco-pus may be brought away.

There are two points of importance with regard to this operation of opening the sphenoidal sinus. In using an instrument for such a purpose one must be certain, 1st of the direction in which it ought to be introduced; 2nd of the depth from the anterior nares at which the body of the sphenoid lies. The correct direction is indicated by a line drawn from the anterior nasal spine upwards and backwards, crossing the middle turbinated body about its middle.

The average depth of the anterior surface of the sphenoid from the anterior nares has been found by numerous observations to be from 7½ to 8 cm.—rather more in men than in women. When the probe has entered the sinus it may pass as deeply as 9 cm.

As the partition which divides the sphenoidal sinus into two chambers is often placed very much to one side, it is quite possible that the right sinus may be entered from the left nostril, or *vice versa*. But that is of no consequence as long as the suppurating cavity is entered.

In the skulls which have been passed round the right sinus will be seen in each case to be the larger of the two. Preparation No. 4 shows a very large sinus, and preparation No. 3 (the other half of the same skull) shows the extreme thinness of the bony wall which separates the sphenoidal sinus from the cranial cavity. At one point the bone is particularly thin and has given way, and it is interesting to notice that against this very thin part in the recent state would lie the cavernous sinus.

In only one condition of the nose can the diagnosis of pus in the sphenoidal sinus be made at once. The case to which I referred in speaking of subjective symptoms was of this sort. The patient, a woman of 45, consulted me five months ago on account of various discomforts in her throat. Her fauces and larynx were normal, and I was thinking of referring her symptoms to the menopause when the post nasal mirror showed me pus lying in the posterior nares, and covering the vault of the pharynx. Examination of the anterior nares revealed pus, partly inspissated, blocking the view. After cleaning the nose I found that both the inferior and middle turbinated bodies were very greatly atrophied, so much so that I had an almost uninterrupted view of the anterior surface of the sphenoid, to which some pus was still adhering. On wiping this off I saw the deep red surface of mucous membrane covering the sphenoid with one little yellow spot of pus above its centre. Examination with the probe showed that this was the entrance of the sinus. The case was apparently of very old standing, and the pus had little colour.

Such a high degree of atrophy is not, so far as I know, common in sphenoidal disease; but pronounced atrophy in one nostril is always suggestive either of very chronic empyema, or old-standing bone disease; or of both conditions combined.

In ordinary cases the diagnosis is by no means so easy as it was in this case, yet it can generally be made quite definitely.

The diagnosis of posterior ethmoidal disease is generally made by exclusion. Pus which appears in the olfactory fissure and naso-pharynx after the sphenoidal sinus is clean, must of necessity come from the posterior ethmoidal cells. Sometimes bare bone may be felt with the probe.

This concludes, gentlemen, the brief outline sketch I have endeavoured to give of the diagnosis of these affections. The cavities are examined in a certain definite order—the order, namely, of the frequency with which they are diseased.

ON THE THERAPEUTIC USES OF SEA-TRAVEL. (A PERSONAL EXPERIENCE).

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It has been wisely said that writing should be undertaken for only one of two reasons, either that the writer has something fresh to say, or that he has something old to tell in a new way. There is, however, yet another excuse, namely, a personal experience on an old subject.

In this paper I wish to deal with the health-giving possibilities of only those voyages which I have myself undertaken, and as these, though only four in number, include every ocean except the Arctic and the Antarctic, they therefore give a fair experience of the prevailing conditions of sea-voyaging.

From the therapeutic point of view I was early impressed by the loose use of sea-travel as a remedial agent, and by the number of cases that I met travelling under a variety of disadvantageous circumstances. Not the least useful information that I gained was a knowledge of the conditions prevailing on shipboard; and, as I have excellent reason to know, many unhappy patients might be saved from much discomfort and misery if their medical advisers had any accurate idea of the state of things on even a first-class liner in very bad or very hot weather. One patient, at least, I have seen die on board ship (of cardiac disease), owing to sea-sickness and sheer unavoidable discomfort. In another case, the first knowledge of the patient's condition was brought to us by a very grave attack of hæmoptysis, yet it seemed that this patient had been on his back (after hæmoptysis) for a month before sailing, and his doctor had not even thought fit to notify the surgeon of the ship as to the condition of his patient. I have again and again been struck by this remissness—to use a mild term—on the part of members of my profession. Tubercular and other patients appear to be frequently sent off on a long sea-voyage without the only available doctor being in any way advised of their condition.

Some of us, moreover, do not appear to be aware of the dangers of sea-sickness, yet it is very obvious that this malady might easily precipitate a fatal result in some cases, as it did in the one above quoted. Possibly, also, sea-sickness might be dangerous to a phthisical patient. It is commonly believed that phthisical patients do not suffer from this malady, but I saw on one occasion a combination of sea-sickness and phthisical hæmoptysis which all but caused death.

While dealing with the subject of sea-sickness I take occasion to mention that I have tried numerous remedies but know of only one good one, namely, opium in some form or other. When the vomiting is not excessive chlorodyne frequently acts well; but in a bad case morphia hypodermically is the best and most sure remedy. A person suffering severely from sea-sickness is in a state of collapse, with frequent vomiting, pallid and clammy skin, and cold extremities. I found by experience that a hypodermic injection of morphine (or better, perhaps, of morphine and atropin), with hot-water bottles to the feet and alcohol in some form by the mouth if possible, gave far better results than any of the other numerous remedies suggested.

All will agree that no patient suffering from pulmonary tuberculosis ought to share a small sleeping cabin with a healthy person, yet that not infrequently occurs and is commonly unavoidable in the absence of information from the patient's medical attendant.

Anyone, who has had occasion to be ill for even a few days in a small cabin, and without the necessary constant (and possibly trained) attention available at home, will agree that no patient should be sent on a voyage if there is reasonable probability of his being confined to his cabin. Again, I repeat that anyone who does not know the conditions of sea-life—even on a good vessel and in fair weather—cannot be too careful in recommending a sea-voyage to an invalid It should be unnecessary to say that in all cases the doctor of the ship should be informed by the last medical attendant of the state of his patient; yet this is not done in many serious cases. I do not wish in any way to decry the value of sea-travel, in suitable cases no other treatment is superior; but, the traveller must not be an invalid in a sense of the amount of attention and comfort required.

I am very well aware that some of these observations may seem too obvious to need stating, but I can only say that I speak from experience and that I have been repeatedly struck by the presence on board ship of patients who ought to have been at home and in bed.

The chief and obvious difficulty with regard to sea-travel is of course the expense, and it is a regrettable fact that so far no satisfactory means have been devised for cheapening this remedy. So far it is only for the well-to-do, or else can only be obtained by great sacrifices; yet it is quite possible that the present cost might be much reduced if this method of treatment was more generally used. It results from the cost that the time spent at sea is often far too short. It is rarely that a patient gets more than six months at sea, and this is commonly an insufficient time for tubercular disease. The advocates of the Alpine high altitude treatment demand a period of two years if possible, or of two winters and one summer.

THE SEA-VOYAGES.

The voyages I wish to speak of are three in number:—

(1) To South Africa, by way of Madeira and Teneriffe;

(2) Round the world, by way of South Africa and Cape Horn.

(3) To the East, through the Mediterranean Sea to India, China, and Japan.

Of these three, the first two are the voyages commonly undertaken in search of health. The voyage by sailing ship to Australia is undoubtedly well suited to health seekers, especially to tubercular patients, but not all are suited to the monotony of three or four months on a sailing ship. Another very suitable voyage for certain cases is that to the West Indies, but my intention at present is to write only of those voyages which I have myself undertaken.

I.—THE VOYAGE TO SOUTH AFRICA.

This voyage is essentially suitable for patients who have nothing organically wrong, such as convalescents from various diseases or tired brain workers. The voyage is a fairly smooth one as a rule. The time occupied by the voyage is about 18 days; but an invalid should generally choose a slow steamer, as much for the extra quietude as for the increased time at sea. The voyage is broken at Madeira or Teneriffe, and possibly at St. Helena; thus gaining in interest without adding too much excitement. A three weeks stay in the colony, with about three weeks' voyage each way, makes an agreeable two months' holiday. In making the journey of this duration it is probably best to undertake it either in spring or autumn, in order to avoid the South African summer heat and cold rains of winter. Yet the mid-summer months of Cape Colony are not disagreeably hot if Cape Town itself be avoided. The traveller making a short stay does best to leave the ship at Cape Town and spend his available time in travelling about the Colony, or if he be an invalid he may suitably spend his time at such a place as Wynberg, on the slopes of Table Mountain. The average maximum temperature of Wynberg for the two hottest months of the year being 80° and 75° respectively, it will be seen that the heat is not excessive here even in summer. (South Africa as a health resort.—Fuller.)

Patients making a long stay should undoubtedly proceed to the uplands of the Colony, to Natal or the Orange Free State; but I am speaking from the point of view of making only a three weeks' stay between the voyages. Of the places *en route*, Madeira had at one time a great reputation for the cure of phthisical cases, but it is now largely replaced by the Canary Islands. The climate of Madeira is warm, moist, and relaxing, and the place has the additional disadvantage of being very hilly. Yet, I think the climate might be made use of as a palliative remedy in cases of incurable phthisis and of irritable chronic bronchitis, and also in some cardiac and arterial conditions.

To conclude, the voyage to the Cape and back is too short to be of permanent use in the case of pulmonary tuberculosis, but is of great value in the treatment of convalescence or of neurasthenic and other functional states.

2.—THE VOYAGE THROUGH THE MEDITERRANEAN TO THE EAST INDIES, CHINA, AND JAPAN.

This voyage is generally held (and, on the whole, rightly) to be entirely unsuited to invalids, but very suitable for those who, having no organic disease, require prolonged change of air and scene. For ever-varying change of scene no voyage can compare with this one, and by comparison others are weary and monotonous. It is pre-eminently (even more so than the Cape voyage) for the over-tired man, for the neurasthenic, and possibly for very slight mental cases. The changes of temperature are far too sudden and severe for the cure of lung disease, and it is, I think, generally held that no form of cardiac disease improves at sea, but of this I am not convinced. Owing to the course of that journey it is extremely difficult to find a period of time during which the climate would be at all equable. July, August, and September are the hottest months in the Red Sea, and it is not advisable for weakly people to pass through during these months. The south-west monsoon blows in the Indian Ocean from April to September, and during this time there is a heavy sea and an air saturated with warm moisture. The monsoon should not, if possible, be intruded upon by the health or pleasure seeker. The north-east monsoon is chiefly felt in the China seas, but it is not markedly unpleasant. The seasons of Northern China and of Japan are very similar to those of England, but more definite and more severe, hotter and colder respectively. It is agreed that October is the best month for travel in Japan, as the climate is then cool yet bright and sunny; it is also worth mentioning that at this time of year the wonderful autumnal tints of the foliage are at their best, these constituting one of the greatest of the natural beauties of this country. The Malacca Straits and the Dutch East Indies are not suitable for health purposes, on account of the heat and the great prevalence of malaria.

The many and frequent changes of climate experienced during this voyage constitute the great drawback for an invalid. One would best travel from England to Egypt in summer; but even in summer the Mediterranean Sea may be cold and stormy, and the English Channel and Atlantic are far more doubtful. Moreover, to start in summer is to expose oneself to great heat in the Red Sea and Indian Ocean, and to meet the monsoon. There is frequently a great and rapid change of temperature at the north end of the Red Sea, chiefly owing to the fact that a northerly wind is very prevalent here; this change is most marked on the return journey. For a six months voyage great variations in temperature might be avoided by leaving England in spring and returning in autumn, but at this time the traveller would be exposed to great heat and bad weather. The winter of China and

Japan is too severe for travelling with comfort. On the whole I think the best time would be from September to January or February. In addition to the troublesome climatic conditions there are other disadvantages for an invalid. The frequent visiting of new countries, with the attendant sight-seeing and hurry, is liable to be very harmful to a weakly person. These very circumstances may make the journey an ideal one for certain neurotic cases or for the self-concentrated hypochondriac. The voyage to Australia by way of the Suez Canal is often used as a health voyage, but it does not, in my opinion, compare with the long sea route to Australia, though it is the quickest and most interesting.

3.—THE VOYAGE ROUND THE WORLD; BY WAY OF NEW ZEALAND, THE CAPE OF GOOD HOPE, AND CAPE HORN.

For the purposes of health this is the longest voyage that can be made by steamship. Three months, in all, are spent at sea; a six weeks voyage each way. The whole journey may be conveniently made to occupy about five months, including two months stay in New Zealand or Australia. New Zealand has many natural beauties for the traveller; while, from the point of view of the invalid, the great variety of climate enables most patients to be suited. The difference of climate between the north and south of the New Zealand islands is as the difference between the climates of Italy and Scotland respectively. It is interesting to note that the southern (cold climate) people are strong and hardy, mostly Scotch by descent; while the northern are already becoming a distinctly weaker looking race.

This voyage is, in my opinion, quite the best of the health voyages that can be made by steamship. The voyage to Australia by sailing ship stands first if length of time spent at sea be most important, but the monotony of three months' life (each way) on a sailing ship is not to be lightly undertaken. On this steam voyage to Australia and back there are only stoppages at Teneriffe, Cape Town, and Hobart Town (Tasmania); and on the return journey at Rio Janeiro, and Teneriffe again, so that the possible harm of frequent excitement and sight-seeing is avoided.

The changes of climate during this voyage are not troublesome if it is undertaken at a suitable time of year. The heat on the West Coast of Africa, when crossing the Equator, is not marked for more than three or four days, and is about the same on the coast of South America when returning. Cape Horn is to be avoided in the winter season on account of the severe cold. A very useful summary of the noon temperatures during four years' sailings of steamers on this voyage is one written from data furnished by the Shaw, Savill, and Albion Steamship Co. (Leopold Hudson, *Lancet*, October, 1893, "On Sea-voyages for the Surgical Convalescent.")* The following conclusion is drawn by Mr. Hudson, and with it I entirely agree :—

"It has often been asserted that the voyage round the world—out by the Cape of Good Hope and home by Cape Horn—is far too cold for ordinary health-seekers . . . . but that this does not now hold good seems to be proved by the tables (*i.e.*, the temperature tables compiled by Mr. Hudson). . . . One cannot fail to observe the gradual and slight variation of the noon temperature on the whole voyage; indeed, one is struck by the extraordinary uniformity of the temperature averages throughout the year, and there were very few days when the passengers were not able to enjoy themselves in the open air on deck. The extreme averages, in fact, do not vary by 10°. The lowest is that furnished by steamers leaving New Zealand in July, amounting to 55°, the average for the corresponding outward trip being 58°. The highest average temperature was attained by steamers leaving either side in December or January, being respectively 60° and 61° for the outward trip and 61° and 64° for the return journey. It will be seen from the tables that, contrary perhaps to expectation, if it is wished to secure the warmest round-world voyage, that is, the highest series of mean temperatures, the start must be made from

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* These temperature tables are also published by the Shaw, Savill, and Albion SS. Co., and would, I have no doubt, be supplied by them on request.

England about November, whilst in order to experience the coolest voyage and the lowest set of mean temperatures one should set out from this country in May." It is especially to be noted in this connection that mean temperature is a far better indication of climate at sea than on land. "Those sudden changes of temperature which are so frequent on shore, often amounting to 15 or 20 degrees in the twenty-four hours, and proving very trying to invalids, being almost unknown at sea, where the extreme daily limits of temperature are usually comprised within 3 or 4 degrees" (Hudson). These remarks, however, refer to this particular voyage. On the voyage through the Mediterranean to the East great variations of temperature may be encountered: I have myself noted a sudden change of 25° at the north end of the Red Sea, and this in about two hours. When rounding Cape Horn in July (winter) the average temperature is at the lowest point, and it is not advisable for any but robust people to travel here at this time of year. I myself rounded Cape Horn in July, and the discomfort was considerable, the decks being covered with ice and the cabins too hot or draughty; very unsuitable for delicate people.

This voyage is suitable for all the forms of ill-health which benefit by the sea; it is by far the best steamship voyage for cases of curable pulmonary tuberculosis. The summary of average noon temperatures (referred to) shows distinctly that the most even temperature is gained by leaving either end in January or December; it also shows the average noon temperature at each of the places *en route.*

CASES SUITABLE FOR SEA-TRAVEL.

I now come to the consideration of the class of case which may be expected to derive benefit from a sea voyage I do not intend to pass any extensive judgment on this question, but wish more especially to draw attention to cases which I have seen to benefit.

The patient, undoubtedly, most likely to gain definite and permanent good from the sea is one suffering from over-mental strain or from varieties of so-called functional disease (such as functional albuminuria), both ever-increasing classes; secondly, one having only slight organic disease. The essential point is, that the patient, however low his sand may have run, must still have good capacity for repair, must have a good potential vitality. Sea-voyaging is but a poor treatment for the later days of phthisis; this seems obvious, yet by the remembrance of it much misery might be saved.

It is well, first of all, to consider the conditions of life to which a patient is subjected on board ship.

The essential conditions of ship-life are:—

(1) Rest;
(2) Full-feeding;
(3) Constant fresh air;
(4) Change of scene and of method of life.

To these may be added an absence of all worry if a suitable voyage be chosen.

The class of case that will benefit by such an environment is fairly evident. We get, in fact, a modified Weir-Mitchell treatment (without isolation), combined with an "open-air" treatment. Those suffering from over-brain work, convalescents, neurasthenics, and early phthisical cases do admirably on these lines and usually put on flesh rapidly; but, naturally, cardiac and arterial diseases, renal trouble, and plethora are apt to suffer. As might be expected, constipation is one of the most constant of troubles at sea, with a sluggish biliary flow and occasional slight jaundice. It is not easy to diminish the food taken owing to the stimulating action of the fresh air; and, indeed, in the proper cases, it is not advisable to lessen the intake provided that the output is kept to normal. Under such circumstances the heart, vessels, and kidneys are required to be healthy and competent. An exception should probably be made in favour of slight renal mischief in young people, which may, I believe, benefit highly by a sea-voyage, provided always that the case is properly watched and treated.

This is an age of games and exercises, and however valuable they may be, and no one will quarrel with this spirit of the age, it must be admitted that there is also now a marked tendency to overdo exercise. Not infrequently the overworked town-dweller, on taking a holiday, attempts to get himself into condition, as he puts it, by completely overworking a system which required rest and food before it could be capable of physical exercise. This type does excellently well at sea, for he cannot work and he is sure to eat, even to over-eat. Tubercular cases are not infrequently of this type, being often of active mind and disposition, and in possession of a sort of spurious energy. Early tubercular cases certainly do very well at sea, yet it is of great importance that they should be watched and not allowed to do foolish and harmful things. I have on several occasions on board ship seen a phthisical patient announce his disease with a serious relapse, which might easily have been prevented had anyone known of his condition. Hæmoptysis was, in one case, brought on by the patient taking part with the other passengers in some athletic exercises, and, in the other case, by the patient joining in a game of cricket. Moreover, these early tubercle cases, being practically in good health and mostly young, are apt to run wild at the different ports of call and thus help to nullify any previous gain. It is conceded now that cold does not do any harm to phthisical cases, while the constant fresh air, sunshine, and equable temperature of marine climates are of the greatest advantage. To this should be added that catarrh is scarcely known at sea unless previously contracted on land

It is generally held that organic renal disease contraindicates sea-travel. The so-called functional albuminuria is, on the other hand, a type of case likely to be cured by a sea-voyage, provided certain precautions are taken, such as the keeping up of a proper action of the bowels and the prevention of excessive meat consumption. I am under the impression that cases of intermittent albuminuria, in young people with unstable circulation and great variability of pulse tension (as described by Broadbent), are likely to be much improved by sea-travel; but, I note that

Broadbent considers that the best treatment is an active out-door life on land, and writes—"When a long voyage has been ordered I have known the albuminuria to persist while at sea and cease with active exercise on shore." I have myself, in two cases, seen excellent results from a sea-voyage. One of these patients I know to be now in good health, having no albuminuria, some eight years after he went the round-world voyage. A case of slight post-scarlatinal nephritis did very well—under my notice—on a voyage to Japan and back. The patient (a boy aged 15 years) was allowed to eat fairly freely of meat, but was advised to chiefly eat fowl and fish. He also drank in the hot weather, one or two tumblers of water between meals, for the purpose of diluting the urine, which is very concentrated owing to the excessive loss of fluid by sweating. Provided that the urine is kept well diluted, the sweating might be expected to be useful. In this case casts and albumen had disappeared from the urine at the end of three months, and three months later, on his return, the boy appeared to be quite sound.

With regard to female patients, it should be borne in mind that they are as a rule not suitable for sea-travel, being much more inconvenienced than men by the variety of small discomforts which obtain on board ship.

In conclusion, a word with reference to mental patients. Persons who are definitely insane or liable to attacks of definite insanity, ought not to be sent to sea under any circumstances, unless in a private vessel. Mental patients are a nuisance to other passengers, and an unfair responsibility on the shoulders of the officers of the ship. The only thing that can justify the appearance of an insane person on shipboard is the necessity of taking him to his home. On one occasion it fell to my lot to travel home from the Cape with a lady who suffered from recurrent acute mania. Her cries and language could not be deadened, and as her mania was of the foul language and erotic type, it made a considerable impression on her fellow passengers.

I do not mean that cases which may verge on insanity—such as hypochondriasis—are unsuitable for the sea; simple hypochondriasis is very likely to gain benefit, but hypochondriasis forming a part of insanity is not suitable. It is not unusual to find alcoholic cases travelling at sea, usually—like mental cases—in charge of someone. A ship is not a good place for such cases, as it is far too easy for them to evade attention and obtain alcohol. Probably, however, those suffering from the effects of other drugs, such as morphia, chloral, antipyrin and others, would do well, since it would be impossible for them to obtain the drug, but of such cases I have no experience at sea.

MEDICAL ABSTRACTS.

THE DIAGNOSIS OF BLEEDING FROM THE FEMALE GENITALS.

EXTRACTED FROM WINTER'S GYNÆCOLOGICAL DIAGNOSIS.

BY FRED EDGE, F.R.C.S.

Bleeding is the most serious of all gynæcological symptoms, and it is specially important for the whole constitution that the disease of which it may be the symptom should be detected in order that by care and treatment it may be removed with safety at its very source. This is often a difficult, even an insoluble puzzle. The cases are generally easily solved when local diseases of the genitals are the causes of the bleeding, but are very difficult when disturbances of circulation, internal diseases, or nervous influences are to blame.

The first step is to make out the organ from which the blood is flowing. When the bleeding is outwardly the vulva, vagina, portio vaginalis, cervix, and body of the uterus are to be suspected, while the tubes empty blood only in very rare cases outwardly through the uterus. With the discovery of the organ which bleeds there is often found at the same time a distinct disease of it which is causing the bleeding. The practised diagnostician is accustomed to make straight for the body of the uterus as the most general site of bleeding, but the less experienced man will do well to go systematically over the various organs.

Beginning with the vulva. Inspection at once shows the bleeding spot if present. When the mucous membrane is sound bleeding only takes place from injury—falls and bruises—most frequently from coitus; tears of the hymen at times bleed quite freely; laceration of the meatus, the clitoris, and the perinæum may be caused by violent coitus. Varicose veins when pregnancy is present are to be thought of, and are easily known when seen. Ulcerative processes of the vulva seldom cause bleeding unless there be breaking down cancer, or lupus; epithelioma rarely causes it. Syphilitic lesions seldom bleed spontaneously, and generally some trauma starts bleeding from them. When these ulcers are the causes of bleeding the spot is directly visible or it is covered with blood clot.

The vagina is next examined. If the bleeding comes from this part one can make out with the speculum either the bleeding point itself or some disorder of the walls which may cause it. The normal vagina only bleeds after injury, generally from coitus, and the wounds can be either seen or felt. Disorders of the vaginal wall which may easily lead to bleeding are carcinoma, sarcoma, gummata, and ulcers from pressure of pessaries. Bleeding without any palpable disease of the vaginal mucous membrane is observed in the patchy colpitis of senility, where under the thinned squamous epithelium the very hyperæmic papillæ are liable to rupture of their vessels from the slightest disturbance or from elevation of the local blood pressure.

When nothing is made out in the vagina the portio vaginalis of the cervix is next inspected. It is easy to determine whether the blood arises from this, since one can either feel distinct alterations which are evidently causes of bleeding, or when the mucous membrane is intact one can see the bleeding spot through the speculum. When neither case exists the bleeding does not come from the portio vaginalis. All processes which lead to ulceration and the opening of vessels are causes of bleeding, as carcinoma, sarcoma, and ulcerative processes of all kinds, *i.e.*, tuberculosis, syphilis, the use of caustics, and in bed-ridden patients. Bleeding from an unaltered portio vaginalis with good sound squamous epithelium is extremely rare. But there are a lot of degenerative changes of the mucous membrane of the portio which may become sources of bleeding, *i.e.*, erosions, circumscribed injection of the vessels in the papillæ resembling the conditions found in senile or maculous colpitis, so-called erosions of Fischel—real losses of tissue which expose the infiltrated stratum mucosum after the squamous epithelium has been rubbed off, and certain peculiar ulcerative processes described by Ruge which sometimes approach the ordinary erosions and sometimes Fischel's erosions, and consist of quite shallow losses of substance with infiltrated tissues, and in which thin-walled vessels run and often end openly. All these degenerative changes easily led to bleeding either from mechanical disturbance—*i.e.*, coitus and examination—or when disorders of the circulation occur either from bodily exertion or psychical excitement. Since these conditions do not always lead to bleeding, and because they are generally complicated by some disease in a higher section which may be the cause of the bleeding, it is very important to decide whether any bleeding present has really originated from these conditions. Usually a look at the portio through a speculum settles this question; sometimes the drawing away of the vaginal mucous membrane will set up bleeding, and a vigorous wipe always does so. In doubtful cases the portio should be cauterised with chloride of zinc or liquor perri perchloridi, and one can then judge by the cessation of the bleeding whether the uterus is also involved.

If the portio vaginalis can be excluded with certainty it follows that the blood is proved to come out of the uterus; but the discovery of the causes is now much more difficult because it is generally impossible to see or feel the bleeding spot directly; if one can do so, then the degenerative changes are in the lower portion of the cervical substance, or the os externum is very widely open.

The examination must be directed to carcinoma, sarcoma, myoma, and mucous polypi of the cervical. The intact membrane does not bleed; when diseased it bleeds much more rarely than the uterine mucous membrane, since it is not affected by the physiological blood disturbances; however, small hæmorrhages are seen in acute infectious catarrh with great hyperæmia of the mucous membrane, and in chronic hyperplastic conditions with the development of small vascular polypi.

When the cervix is proved completely free the mucous membrane of the *body of the uterus* is the source of the trouble; this part is to blame more than all the others put together. The diagnosis of uterine bleeding includes a great crowd of diseases of the uterus and the adnexa, of constitutional disorders of physical and of nervous nature, and of passing disturbances of the circulation; to determine from all these the true cause of the bleeding is one of the most difficult problems.

Menstruation alone is normal, every excessive period and every irregular bleeding is abnormal and must have a special cause. It is recommended that in seeking the cause a definite mode of examination be thought of, and whenever possible an objective demonstrable disease made out. The examination begins with the uterus, and the first thing noted is whether the uterus is clearly increased in size. If it is, then we have to do with either new growths in its walls (myoma, sarcoma), or in the cavity of the uterus (carcinoma, sarcoma, polypi), or chronic metritis, which often comes on in combination with hæmorrhagic endometritis, or pregnancy with its disorders (bleeding of pregnancy from endometritis, from placenta previa or after injury; abortion, retention of remnants of placenta or decidua), or conditions of subinvolution which may easily follow labour or abortion, even when retention is not long, and which keeps up somewhat severe hæmorrhages. If the uterus is found on bimanual examination to be of normal size the cavity must be investigated for any evidence of commencing malignant diseases and for chronic endometritis. If the endometrium is found with the sound to be smooth all over one may consider that the uterus is practically sound and the examination may be carried to the adnexa and the uterine surroundings; diseases of these are very frequently the cause of so-called *secondary uterine bleedings.*

Taking the *tubes*, the causes of uterine hæmorrhages are often found to be recent and large pyosalpinges which often cause the menstruations to be protracted, excessive, too early, and occsionally very irregular; fresh hæmorrhages also mark the exacerbation of tubal diseases. Chronic tubal diseases and chronic tumours of the adnexa are looked upon with much less reason as the causes of true secondary uterine hæmorrhage; really the cause is a coexisting endometritis. If the examination discloses a tubal gestation the bleeding may without exception be ascribed to it; if the fœtus be alive there are no hæmorrhages or only rare ones, while if the fœtus be dead, or a tubal mole be forming, or peritubal or retrouterine hæmatocele exist, hæmorrhages will come on. These never arise from the tube itself—it is only conceivable if the uterine ostium be widely open and the blood remain fluid—but are due to congestion and subinvolution. Diseases of the *ovaries* are much rarer causes of uterine bleeding in spite of the intimate relationship between ovarian activity and uterine hæmorrhages.

Ovarian tumours, when they are one-sided, very rarely cause bleeding; it is more frequent with double-sided tumours, and without doubt most frequent when double-sided malignant tumours (especially cancer) are present. No doubt these hæmorrhages in the majority of cases must be taken as secondary, but as metastases do occur in the body of the uterus one should give particular care to the observation of the endometrium.

Inflammatory diseases of the ovaries lead sometimes to uterine bleeding. If we leave out those cases of inflammation in which the ovaries are affected with the tubes and the peritoneum, and in which it is impossible to tell how much each has to do wlth the uterine bleeding, and if we take only cases of isolated öophoritis we find indeed in acute disease occasional irregular hæmorrhages, while in chronic conditions the menstruations are not infrequently prolonged and excessive. Whether the deranged and protracted ovulation can provoke hæmorrhage or perhaps endometritis it is naturally difficult to decide.

As regards the peritoneum the condition of pelveoperitonitis may be considered as a cause of uterine bleeding; in an acute stage or exacerbation of a chronic form it may produce irregular somewhat prolonged uterine hæmorrhage of a purely symptomatic nature.; frequently they appear as the initial symptoms of this disease. Although uterine hæmorrhages do occur in chronic peritonitis with adhesions and exudation masses, yet it is more probable that there is a complication of endometritis in action; very large exudations are excepted as they may cause hæmorrhage by obstruction. Examination with the sound will help to clear the condition. Uterine hæmorrhages are almost constantly present when there are large collections of blood in the peritoneum, and they may be protracted over weeks without having any definite type.

Parametritic diseases are certainly much more rarely the causes of bleeding, whether in the acute or chronic stages. The bleeding is most often seen with parametritic bands or so-called stump exudations, which occasionally remain after leparotomies, and especially removal of the tubes, and which consist of peri- and parametritic thickenings on the remnants of the tubes. There is a suspicion of a complicating endometritis in all chronic diseases, as in chronic peritonitis, whenever the bleeding takes a menstrual type.

If examination of the uterus and its surroundings gives no conditions which can be looked upon as causes of the bleeding, there may still be certain local degenerations to blame which connot be recognised by clinical signs.

In considering such cases it is important to know whether we are dealing with an isolated severe loss or with menorrhagia recurring at each period. When it is the first the next thought should be that it is a single free menstruation, which is not recognised as such because it is the first after the puerperium of abortion or labour, or comes on after long amenorrhœa; its diagnosis as such is usually made by the further course of the case, but at times the accompanying molimina or peculiar psychical or physical sensations enable this to be done.

Of practical value is the differentiation of this first menstruation after labour and abortion from the flooding from retention of products of conception. It is based on the result of the use of the sound, and upon the interval of freedom from bleeding after the abortion. Isolated severe losses, whether menstrual or intermenstrual, also occur after great mental disturbances, fright, influence of temperature as cold upon the abdomen, baths, trauma, and severe exertion.

It is not easy to determine the direct causation of disturbances of the circulation; it is, however, important to decide whether it is of such nature or the initial symptom of an inflammatory disease. When the patient reports that at each menstruation the excessive loss recurs, that is, true menorrhagia is present, it will be found that the cases without demonstrable degeneration are rare, but two conditions are to be remembered. Firstly, one finds not infrequently after abortion or labour a long continuing state of defective involution of the uterus which becomes a sub-involution. Here there is hyperæmia of the uterus and an enlarged uterine cavity, which affords the distended mucous membrane no support; the excessive so-called first menstruation is in a certain sense to be taken as a type of this conditon; in the same way severe losses occur with the later periods without any retention or inflammation being present; likewise dysmenorrhœa may come on because such a uterus remains irritable for a longer period and reacts upon the congestion by contraction or colic.

It is practically important to differentiate the condition of chronic subinvolution from endometritis. A similar state arises without any immediate connection with a puerperium in persons who have had many labours and miscarriages. Here also there are no objective signs except perhaps a dilated uterine cavity, and thin uterine walls. The losses are very heavy, because there is no resistance in the cavity, and the vessels are not compressed by the slack uterine wall; the tone of the uterine muscle is lost (chronic atony, Lomer). In these cases also the separation from endometritis is important.

It is further to be noted that purely symptomatic menorrhagia may occur also in acute vaginal and cervical catarrh, just as in peri- and parametritis without the endometrium being diseased. But bleeding in chronic catarrh points always to the presence of endometritis. Besides inversion, only retroflexion is to be mentioned out of the uterine displacements as causing congestive hæmorrhage, without endometritis, in the form of menorrhagia.

The real cause of uterine hæmorrhages is to be sought in the great majority of cases in diseases of the organs in the lower abdomen and pelvis; but if no clue is obtained in these, we must examine the general systems, and perhaps in some disease of these the cause may be found. In the first place, there are a series of infectious diseases in whose acute stages the menses may be so heavy, or such great irregular hæmorrhages may take place as to completely dominate the history of the case. Especially are such hæmorrhages observed in influenza, typhus, cholera, scarlatina, variola, and acute arthritic rheumatism, as the issue of hæmorrhagic endometritis, or of chronic endometritis, developed as a sequela. More rarely chronic constitutional diseases lead to hæmorrhages from the uterus, and then usually only as menorrhagia; they are diseases in which general disturbances of the circulation take place, for instance, heart and lung diseases, or they are diseases with local circulatory disturbance in the pelvis, as diseases of the liver and abdominal tumours, or they are blood diseases, most often the morbus maculosus Werlhofii. Hæmorrhages also occur in mental diseases.

In seeking the cause of bleeding from the genital tract, the objective proof of bleeding, and the observation of the amount of blood lost, has the advantage that it frees the physician from the story of the patient, who often has most peculiar views as to the amount usually lost; it also further enables him to get certain clues from the inspection of the blood, which may certainly give much aid in the diagnosis. In addition to the amount of blood, there are the colour, the consistence, the formation of clots, and the mixture with other secretions and constituents of tissues to be considered. Naturally the examination goes back to the objective proof of the causes of the bleeding, but in a few special cases it may lead to the fixing of a diagnosis.

Normal menses are thin fluid, somewhat thicker when mixed with mucus, with a darkish red to black tint, and have a peculiar musty, often slightly fœtid, smell; coagulation is prevented by the acid vaginal secretion. Fresh quickly-clotting blood points to a quite recently opened source of bleeding, as is seen in abortion, polypi, malignant growths breaking down and generally after digital exploration or after sounding of the uterine cavity in endometritis or retention of the decidua.

Clot formations, or "pieces of flesh," point generally to such free bleeding that the acid secretion of the vagina is not present in quantity enough to prevent clotting. This formation of pieces is always pathological, and comes on in too heavy menstrual losses, in abortions, polypi, and breaking down tumours; long protracted feeble losses, as in hæmatocele, seldom form clots. If the blood appears of a dirty red brown colour it has been retained some time in the uterus, and has undergone chemical changes. This colour is oftener seen in the hæmorrhages of pregnancy, and the last portion of the blood is finally only recognisable as a lemon-coloured staining of the secretion.

An intimate mingling of blood and mucus is found when only the cervical mucous membrane bleeds, as in recent catarrhs and polypi, or when the cervix secretes mucus freely during bleeding from the body of the uterus as in endometritis, bleeding of pregnancy, and conditions of sub-involution after abortion and labour. Thickened blood of syrupy consistence is met with when the blood has been retained for a long time in a closed space, *i.e.*, hæmatokolpos and hæmatometra; in these conditions true coagulation does not occur.

Fragments of tissue in the blood point to disintegration of new growths or to exfoliating and breaking down pieces of mucous membrane, especially in septic abortion.

The history of the patient is but rarely of value for the diagnosis of the cause. The most useful history is the distinct statement that the bleeding is menstrual or intermenstrual, but generally this statement cannot be made with certainty.

A hæmorrhage can only be taken as menstrual when it occurs at the proper time, or at the most a few days before or after the time, when the usual local or general sensations accompany it, or when it has the average amount of a menstrual flow. On the other hand, it is inter-menstrual when it is quite irregular or very brief or very protracted. Menstrual hæmorrhages as a rule point to conditions which prolong and increase the congestive hyperæmia of the genitals at these times, or to those which prevent its termination, or keep it going beyond its normal time, as, specially endometritis, states of subinvolution and inflammation near the uterus. Inter-menstrual losses point more to permanent changes, as degenerating new growths, polypi, or to acute diseases or circulatory disturbances, as trauma, cold, acute inflammations, psychical irritation, recent abortion, or extra-uterine pregnancy. It is in the nature of the things that we have here no definite law but only a certain kind of indication.

The history of *constant bleeding after cohabitation* is important. It may be due to mechanical injury by the penis of some part inclined to bleed, *i. e.*, especially cancer, in rare cases erosion or ulcer of the portio vaginalis or of the vagina, or senile kolpitis. On the other hand, bleeding after coitus may be due to overdistension of vessels leading to rupture, but this does not occur with normal mucous membrane, but only when inflamed (endometritis), or with polypi, or breaking down cancer in the cervix or body. The bleeding of coitus points especially to degenerating new growths.

Still more important for diagnosis is a history of *bleeding in the post climacteric stage.* Every hæmorrhage occurring after the real climacteric has taken place has a high pathological significance and demands careful investigation of its cause. A "return of the periods," an acceptation with which the patient gladly deceives herself as to the meaning of the loss, is only possible so long as ovulation has not yet ceased. The clinical signs are wanting to prove this, so that the demarcation of the climacteric is difficult to settle; generally we may take it that in a woman who has reached the age (about 45) the cessation of menstruation for about a year proves the climacteric, and each later hæmorrhage should be looked upon as post climacteric. The preponderating cause of post climacteric hæmorrhage is the development of malignant new growths in the genitals, especially the uterus.

Neumann counted this cause 118 times in 183 cases, that is in 65 per cent, or about two-thirds of the cases. Besides cancer, the atrophied attenuated mucous membrane is much to blame in this way, from coitus, trauma, pessaries, or the hæmorrhages occur spontaneously from ulcers of other sorts, in senile kolpitis, from mucous polypi, and submucous myomata. All causes which cause bleeding during sexual maturity from the mucous membrane, as interstitial myomata, endometritis, periuterine inflammations, internal diseases, and disturbances of the circulation have no value after the climacteric. Once the author saw dangerous hæmorrhage in an old woman, where, after extirpation of the uterus, no other cause could be found except disease of the vessels.

In post-climacteric hæmorrhage, therefore, everything directs us to investigate for cancer as the cause.

REPORTS OF SOCIETIES.

BRITISH MEDICAL ASSOCIATION.

BIRMINGHAM AND MIDLAND COUNTIES BRANCH.

Thursday, November 10th, 1898, Mr. VINCENT JACKSON, President, in the chair.

Mr. Barling read a paper on Some Cases of Gall-stones Impacted in the Cystic Duct.

Dr. McCardie read a paper on the Administration of a Mixture of Chloroform and Ether by means of a Clover's Inhaler without the bag.

Gastro-Jejunostomy —Mr. Haslam showed a woman aged 34 on whom he had performed this operation for a fibrous stricture of the pylorus. The patient was admitted into the hospital, under the care of Dr. Simon, in March last, with an eighteen months' history of pain on taking food, vomiting, and loss of flesh. On examination a large mass could be felt in the neighbourhood of the pylorus, and the stomach was dilated. A Murphy's button was used, and the patient is now quite well and able to eat and digest anything, and has gained four stone in weight. The button has not yet been passed.

Tooth-plate removed by Œsophagotomy.—Mr. Jordan Lloyd showed a patient about 30 years of age who, sixteen days before, had swallowed during the night a vulcanised tooth-plate, carrying the four upper incisor teeth. The hooks fastening the "piece" to the neighbouring canines had become faulty, and the patient had been indifferent to their useless condition. He had always been in the habit of wearing the artificial teeth during sleep, and had never before had any trouble in consequence. The man was admitted to the Queen's Hospital shortly after the plate was missed, and attempts were made by the house surgeon to extract it with probang and coin catchers. These failing, Mr. Lloyd had the man anæsthetised and attempted again to remove the foreign body. The plate could be readily detected by instruments, but could not be "caught." It was situated about eleven inches from the incisor teeth. The operation of œsophagotomy was at once performed (eight hours after the swallowing had taken place) A clean cut incision was made in the œsophagus, about one inch below the level of the cricoid cartilage. A finger was passed beneath the substance, and as the plate could not be removed easily through the opening in the œsophagus it was manipulated upwards into the pharynx, from whence it was readily extracted. No vessels were ligated. The wound in the œsophagus was sewn with a non-perforating continuous catgut suture, and the skin edges with silkworm-gut, a small rubber drainage tube being inserted to deep part of wound. Patient was fed by enemata for four days. Wound healed primarily, and he was now quite well.

Appendix Vermiformis strangulated in a retro-peritoneal fossa.—Mr. Heaton showed an appendix vermiformis which he had removed by abdominal section from a little girl aged nine. The appendix was five inches long. At the operation there was no evidence of any peritonitis around the cæcum. The appendix was quite free and natural in appearance except for its distal end. This was tightly strangulated in a peritoneal sac passing upwards behind the junction of the ileum with the cæcum. This "ileo-cæcal pouch" had a smooth rounded orifice and was about the size of a walnut.

The patient was under the care of Dr. Quirke, and had been ill for five days with acute abdominal symptoms, marked by recurring attacks of severe colic and collapse, with vomiting. She was now convalescent.

Early abortion.—Dr. Purslow showed an ovum from a case of abortion on the 65th day of pregnancy, the date of the fruitful coitus being exactly known. The embryo measured one inch and three-quarters in a straight line from the cephalic to the caudal curve. Dr. Purslow pointed out that this measurement was somewhat greater than that given in Galabin's "Midwifery," which describes the length of a fœtus at the eighth week as three-fourths of an inch.

LETTER TO EDITOR.

To the Editor of the Birmingham Medical Review.

Sir,—In your very kindly notice of my book, "The Cold Bath Treatment of Typhoid Fever," you call attention to "one serious omission" amongst the sources of fallacy in comparing the mortalities of the expectant and bath periods at the Brisbane Hospital, namely, that no allowance is made for differences in the period of the disease at which the cases first came under treatment. I quite realize that my argument would have appeared stronger had it been possible to do so, but unfortunately the large majority of the 1,828 cases in the expectant period occurred before my connection with the hospital, and the necessary records were not preserved. At the same time I would submit that in the present instance the omission is hardly one of serious import. Of course it is freely admitted that delay in commencing treatment has a most serious influence on the case mortality of typhoid. This is well exemplified in the comparison between the series of 304 cases expectantly treated at the Birmingham General Hospital, and Professor Osler's series of 196 cases treated by systematic cold bathing. Here the correction is most essential, since the conditions under which the two series were admitted were in all probability widely different: not only the hospitals, but the cities and the continents differed.

The condition chiefly affecting the date of admission is the local environment of the hospital. In cities such as Sydney and Melbourne, where there is more than one hospital receiving cases of typhoid, a process of selection is always in action: that hospital, which is situated in the most thickly populated district, always receiving a larger proportion of emergent and late cases, while cases which come under observation early in the fever are sent to institutions less centrally placed. Hence comparisons in mortality between rival hospitals are rarely fair unless largely corrected. For these reasons I have refrained from using statistics drawn from other sources, and have confined myself to Brisbane. For in that city there has never been more than one hospital receiving adult cases of typhoid, and all the conditions which were in operation during the expectant period persisted at any rate for the first three years of the bath period. During the seven and a half years included, there was free immigration into the colony, and the large majority of cases admitted into the fever wards were immigrants who had quite recently arrived. Most of these patients lived in boarding houses, and but few had homes of their own where treatment was possible, so that comparatively early admission was the rule during the whole period. To this and to the absence of selection, I ascribe the fact that the case mortality of typhoid (14·8 per cent.) in the expectant period at the Brisbane Hospital was always lower than that of the large city hospitals in Sydney, Melbourne and this country.

It is to be remembered also that the comparison between the expectant and bath periods at the Brisbane Hospital is designed to show the improvement that was obtained in the *total hospital typhoid death rate*: that all cases are included in both periods, even such as were unsuitable for the bath or indeed for any treatment: that the treatment was commenced in the middle of a severe fever season, and that for the succeeding three years no alteration in the conditions of admission occurred, none at any rate that favoured early admission.

For the first year or so indeed the treatment, as was only natural, was viewed by the public with suspicion, and there was consequently a tendency to defer seeking admission. By the end of the third year this had ceased, the treatment had become distinctly popular and thenceforward early admission became the rule. Before then, however, the minimum death rate of 7 per cent. had been attained.

Another consideration tending to reduce the importance of the omission referred to in the Brisbane Hospital statistics is the large number of cases dealt with. In a small series such as the 196 cases recorded by Osler, a run of early admissions would very materially raise the percentage of such cases: but in large series, especially such as exceed 600, the average date of admission is found to be practically identical for the same institution remaining under the same general conditions.

I am, Sir, yours, etc.,

F. E. HARE, M.D.

(*Late Resident Medical Officer,*
Brisbane General Hospital.)

391, Oxford Street,
London, W.

[WE are glad to publish Dr. Hare's letter, which appears to us to add greatly to the value of his statistics. We still wish that it had been possible to closely compare the two series of cases with regard to the period at which they first came under treatment; but in the absence of exact records in the earlier series, Dr. Hare has given extremely good reason for believing that there is no essential difference between the two in this respect. Our own experience suggests that curious variations do sometimes occur in the period of admission of acute cases, even in the same hospital, and that these variations may sometimes affect even large figures. Hence, the importance which we attach to a definite demonstration on this point.—Ed. and Writer of the Review.]

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We have further received from MESSRS. NICOLAY & Co. specimens of so-called "Hæmatogen," which purports to be a preparation of hæmoglobin and glycerine. It is claimed that this compound is useful in a great variety of disorders, but we cannot regard the value of hæmoglobin taken internally as by any means proved.

New Books, etc., Received.

On the Origin and Progress of Renal Surgery, with Special Reference to Stone in the Kidney and Ureter, and to the Surgical Treatment of Calculous Anuria. Being the Hunterian Lectures for 1898. By HENRY MORRIS, M.A., M.B Lond., F.R.C.S., Senior Surgeon to the Middlesex Hospital: Examiner in Surgery in the University of London, etc. London, Paris, New York, and Melbourne: Cassell and Company Limited. 1898.

Introductory Address at the Opening of the University College Medical School, Cardiff. By ROBERT SAUNDBY, M.D., LL.D., F.R.C.P, Professor of Medicine at Mason University College, and Physician to the General Hospital, Birmingham; President of the Council of the British Medical Association. Birmingham: Cornish Brothers.

Diseases of the Skin. By MALCOLM MORRIS, Surgeon to the Skin Department, St. Mary's Hospital, London. New and Revised Edition. London, Paris, New York, and Melbourne: Cassell and Company Limited. 1898.

On the Study of the Hand for Indications of Local and General Disease. By EDWARD BLAKE, M.D. London: Henry J. Glaisher.

Registration of Midwives. An Appeal to its Supporters. By THOMAS M. WATT, M.A., M.R.C.S.E., L R.C.P.I., L.M. London: Watts and Co.

Wright's Improved Physicians', Surgeons', and Consultants' Visiting List. Compiled by ROBERT SIMPSON, L.R.C.P., L.R.C.S. Vols. A. and B. Sixth Edition. Bristol: John Wright and Co.

A Primer of Psychology and Mental Disease, for use in Training Schools for Attendants and Nurses and in Medical Classes. By C. B. BURR, M.D., Medical Director of Oak Grove Hospital for Nervous and Mental Diseases, Flint, Mich., etc. Second Edition, Revised. Philadelphia, New York, Chicago: The F. A. Davis Company. 1898.

Practical Urinalysis and Urinary Diagnosis. By CHAS. W. PURDY, M.D., LL.D. (Queen's University), Professor of Clinical Medicine at the Chicago Post-graduate Medical School. Fourth, Revised Edition. Philadelphia, New York, Chicago: The F. A. Davis Company. 1898.

On the Marriage Rate. By HENRY MAY, L.R.C.P., Late Medical Officer of Health of Aston Manor.

Manifestations of Syphilis in the Mouth; and the Dangers of Specialism in Medicine. By L. DUNCAN BULKLEY, M.D.

Gout: Its Pathology and Treatment. By ARTHUR G. LUFF, M.D. Lond., F.R.C.P., Physician in Charge of Out-patients, and Lecturer on Forensic Medicine at St. Mary's Hospital. London, Paris, New York, and Melbourne: Cassell and Company Limited 1898.

Drs. Harvey and Davidson's Syllabus of Materia Medica, revised in accordance with the British Pharmacopœia, 1898. By WM. MARTINDALE, F.L.S., F.C.S. Tenth Edition London: H. K. Lewis. 1898.

De la Trachéo-Thyrotomie dans le Cancer du Larynx. Par le Dr. E. J. MOURE.

Tannigeno e Tannalbina. Pel Dott. FRANCESCO CORLETTO.

Transactions of the Clinical Society of London. Volume the Thirty-first. London: Longmans, Green and Co. 1898.

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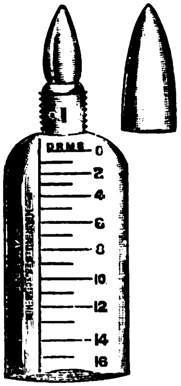

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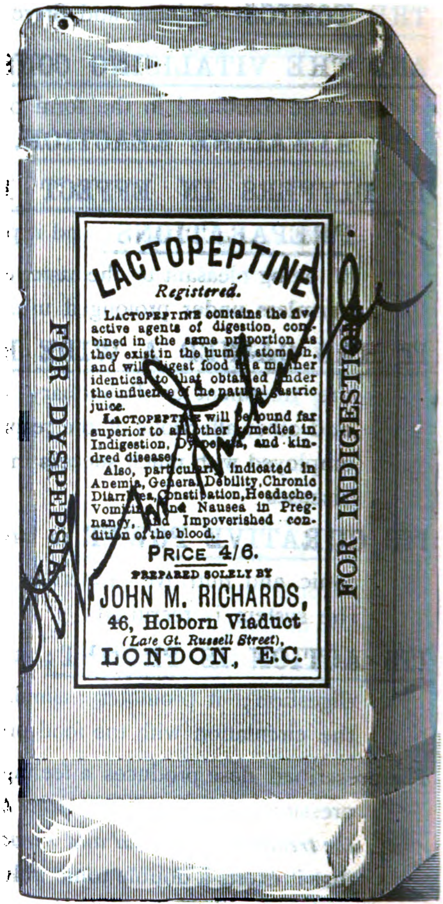

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24	18	15	10	24	19	2	28	5	0	34	0	0	24
25	19	0	0	25	1	8	28	8	4	34	4	2	25
26	19	5	0	25	5	0	28	12	6	34	9	2	26
27	19	11	8	25	10	0	28	18	4	34	15	10	27
28	19	19	2	25	15	10	29	4	2	35	3	4	28
29	20	6	8	26	2	6	29	11	8	35	11	8	29
30	20	15	0	26	10	0	29	19	2	36	0	10	30
31	21	5	0	26	17	6	30	7	6	36	10	10	31
32	21	14	2	27	6	8	30	17	6	37	1	8	32
33	22	5	0	27	15	10	31	7	6	37	14	2	33
34	22	15	10	28	6	8	31	18	4	38	6	8	34
35	23	8	4	28	17	6	32	10	0	39	0	0	35
36	24	1	8	29	10	0	33	2	6	39	15	0	36
37	24	16	8	30	2	6	33	15	10	40	10	0	37
38	25	12	6	30	15	10	34	9	2	41	4	2	38
39	26	9	2	31	10	0	35	4	2	42	0	0	39
40	27	7	6	32	5	0	35	19	2	42	16	8	40
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44	31	12	6	35	17	6	39	13	4	46	16	8	44
45	32	17	6	37	0	0	40	15	10	48	1	8	45
46	34	4	2	38	5	0	42	0	10	49	7	6	46
47	35	14	2	39	11	8	43	7	6	50	16	8	47
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